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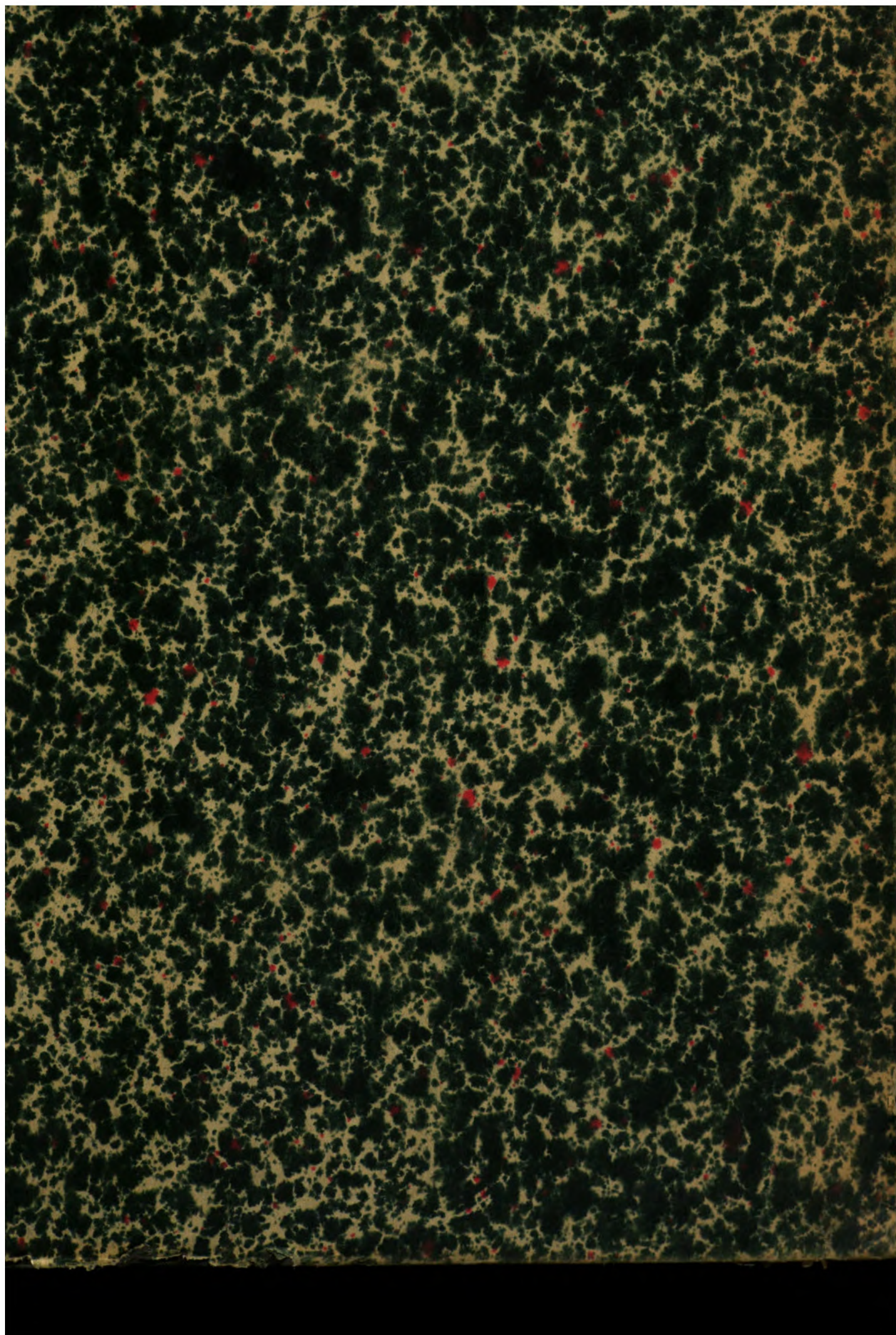
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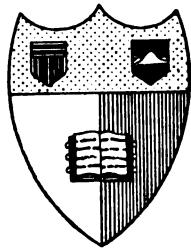
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THE MOTOR WORLD

A trade paper giving the
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26



The success of the
PIERCE-ARROW Car
is undoubtedly due
to the fact that it was
never built to meet
a price. A successful
car came first; price
second.

THE PIERCE-ARROW MOTOR CAR COMPANY

Licensed under Selden Patent

BUFFALO, N. Y.

HARTFORD

Wire Grip Non-Skid Tires

(Midgley Tread)

The Tire That Has
Solved The Problem Tire
Makers Have Been Working
On For Years.

The Hartford Wire Grip Non-Skid Tire is the only true non-skid that is resilient;

The only true non-skid that does not rack and ruin the car;

The only true non-skid that does not mar the easy riding qualities of the car;

The only non-skid that you carry right with you in the tread of the tire itself;

In other words, it is a pneumatic tire, and a non-skid tire combined;

Insure your car, its passengers and the public by putting them on your car now.

This tire is made in standard sizes, Dunlop, Hartford, Quick Detachable Clincher and Clincher; also in millimeter sizes.

WE SELL CONTINENTAL DEMOUNTABLE RIMS

The Hartford Rubber Works Co.
HARTFORD, CONN.

BRANCHES—New York, 57th St. and Broadway; Chicago, 12th St. and Michigan Ave.; Boston, 863 Boylston St.; Philadelphia, 1334 Arch St.; Detroit, 256 Jefferson Ave.; Buffalo, 725 Main St.; Cleveland, 1831 Euclid Ave.; Denver, 1564 Broadway; Atlanta, Ga., 19 Houston St.; Minneapolis, 622 Third Ave., So.; Kansas City, Mo., 719 E. 15th St.; Dallas, Texas, 2029 Commerce St.; St. Louis, Mo., 19th and Locust Sts.

AGENCIES—Chanslor & Lyon Motor Supply Co., San Francisco, Cal.; Los Angeles, Cal.; Fresno, Cal.; Spokane, Wash.; Seattle, Wash.; F. P. Keenan Co., Portland, Ore.; Jos. Woodwell Co., Pittsburg, Pa.; Mercantile Lumber & Supply Co., Kansas City, Mo.





The cold weather which prevails in most sections from five to seven months in the year never menaces the Franklin air-cooled truck.

The Franklin pneumatic-tired, air-cooled truck is the cheapest because in the aggregate it costs less to run. The best available results of actual service under the same conditions show an operating cost per ton mile for the Franklin fifty per cent less than that of any water-cooled truck.

Profitable service with any form of delivery is a matter of moving the most goods at the least cost.

Where Franklin pneumatic-tired, air-cooled trucks replace horse-drawn vehicles the cost of labor is less because fewer employes are required. The efficiency of the service is greatly increased by reason of the rapidity with which the work can be done.

The use of pneumatic tires on the Franklin truck greatly adds to its efficiency. Pneumatic tires increase the amount of work the truck can do by permitting a high average speed, without rack or strain.

Because of this the Franklin truck can do the work of a solid-tired truck of fifty per cent greater capacity and at lower cost.

Pneumatic tires last as long as solid tires. They are more economical to use because they keep jar away from the truck. They are one of the most important factors in securing continuous service and in reducing depreciation and the necessity for repairs.

Air cooling is the only sensible and reliable method for truck motors. It is the simplest. The cooling system costs nothing to maintain. It requires absolutely no attention. It cools perfectly under every condition of service.

The nature of the service to which a motor truck is put in eighty per cent of the industrial sections of the country demands air cooling. It is the only system that will not freeze in cold weather.

Franklin air cooling ensures maximum motor efficiency and reliability. Constant running at high motor speed can not overheat the engine.

Franklin air-cooled, pneumatic-tired motor trucks are the result of six years of steady development. This alone recommends them to the careful purchaser who is looking for the most economical and efficient service.

H H FRANKLIN MANUFACTURING COMPANY Syracuse N Y

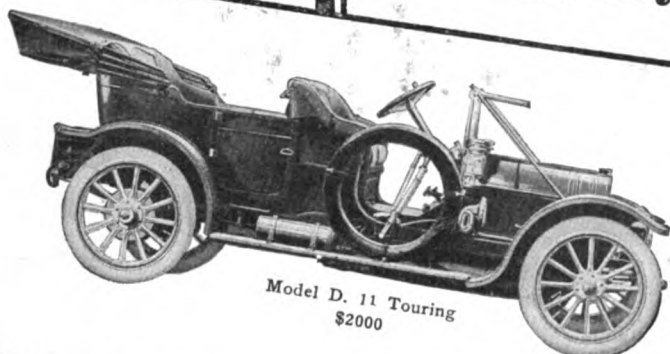
Licensed under Selden Patent

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

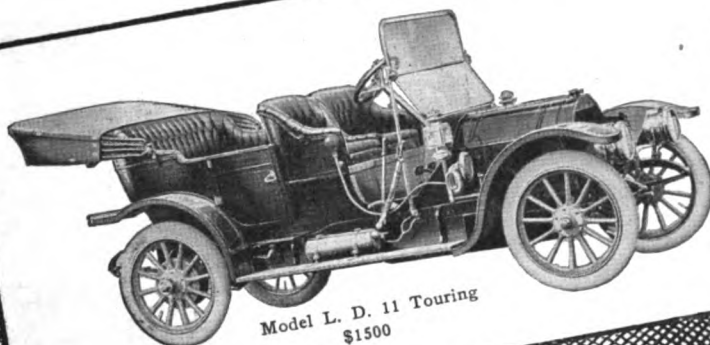
SOLE DISTRIBUTOR

KISSELKAR

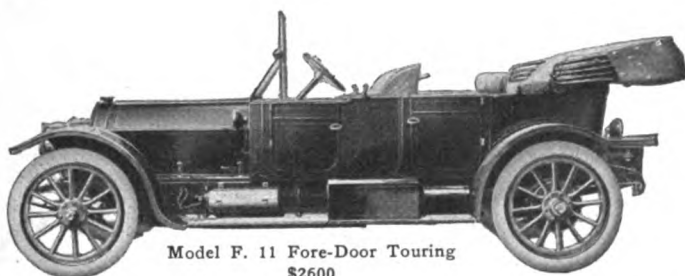
Every Inch a Car



Model D. 11 Touring
\$2000



Model L. D. 11 Touring
\$1500



Model F. 11 Fore-Door Touring
\$2600

The Kissel Kar is more, vibration-proof than all except a very few of the fancy priced cars.

Vibration, the most fatiguing element of automobiling, and the greatest destructive agency in an automobile, is reduced to a minimum in the Kissel Kar, making it a car of silent, impressive motoring ability, and superb comfort.

Ride in a Kissel Kar—discover the luxurious ease of its extra roomy tonneau, its exhilarating, gliding speed—ride and discover these qualities yourself.

The Kissel Kar is **better** made than average automobiles. That's exactly why the Kissel Kar is better riding. We build our car complete in our own factory. We not only grind parts to size, but fit them together with special machinery, which makes perfection of fit **absolute**. This, and a system of multiplied inspection, from the analysis of material to the final "tuning up" of the completed car, fixes the comfort and stand-up qualities of the Kissel Kar at the maximum.

Model L. D. 11, 4 cyl., 30 H. P. . . . \$1500

Model D. 11, 4 cyl., 50 H. P. . . . \$2000

Model F. 11, 6 cyl., 60 H. P. . . . \$2500

The Kissel Kar 3 Ton Truck is the commercial truck of reliability and economy.

Write for illustrated portfolio fully describing the Kissel Kar line.

SEE IT AT THE SHOWS

Pleasure Cars, Space 204, Balcony, New York Show; Space A-4, Armory, Chicago Show.

3 Ton Truck, Commercial Vehicle Section, Space 119-A, New York Show; Main Floor, Section D, Chicago Show.

4 Cyl. 30 H. P.
\$1500

4 Cyl. 50 H. P.
\$2000

6 Cyl. 60 H. P.
\$2500

KISSEL MOTOR CAR COMPANY
159 Kissel Ave.

Hartford, Wis.

Licensed under Selden patent.



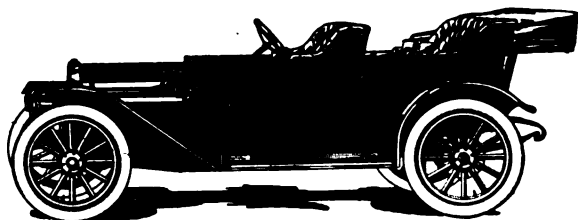
The Mayo—the radiator thoroughbred

¶ Nothing really worth while ever happens by accident.

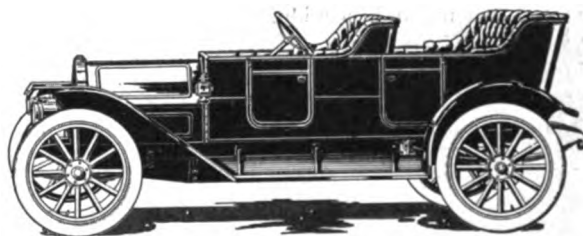
¶ Known results follow the use of Mayo Radiators.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

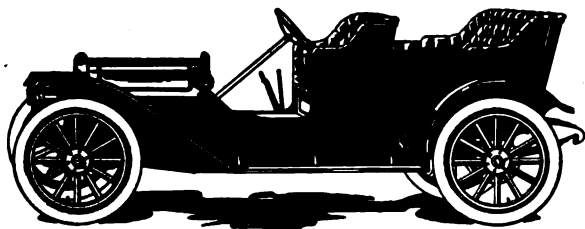
TAKE A GOOD LOOK at the De Tamble cars here illustrated, study their specifications and equipment, compare them with any others that you can obtain, and then say if any other full size, high grade car offers anything like such value for the money. Get rich quick methods are rapidly bringing their natural results and automobile values and prices—there's a difference between values and prices—are finding their proper levels. De Tamble methods and prices were right from the beginning. No one can pay more and get his money's worth or pay less and get De Tamble value.



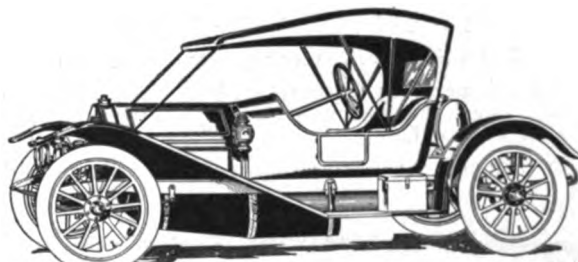
Model K—7-Passenger Fore Door—\$1,675.



Model J—5-Passenger Fore Door—\$1,200.



Model H—5-Passenger Touring Car—\$1,150.



Model G—2-Passenger Roadster—\$1,000.

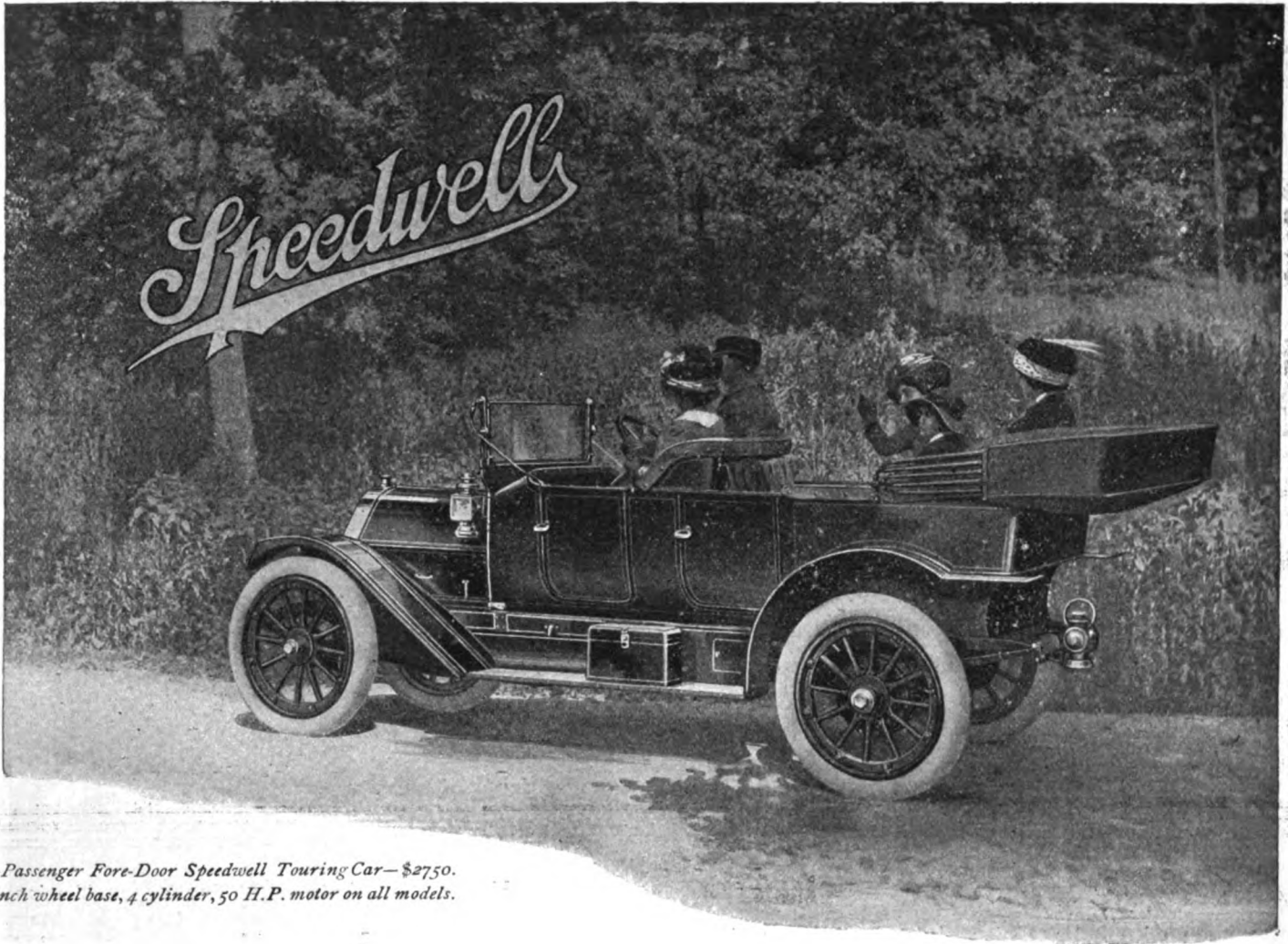
MODEL K 40—45 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; full floating ball bearing rear axle; 120-in. wheel base; 36-in. wheels; Splitdorf magneto; dual ignition; Rushmore gas lamps; Prest-O-Lite tank; three oil lamps; horn; mohair top; wind shield; speedometer; tools; jack and pump.

SPECIFICATIONS:

MODELS G-H-J—36 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; semi-floating ball bearing rear axle; 115-in. wheel base; 34-in. wheels; magneto and dual ignition system; Rushmore gas lamps; generator; three oil lamps; tools; jack and pump.

Catalog and full details of our complete line sent on request. Open territory proposition for live dealers.

THE De TAMBLE MOTORS CO., Anderson, Indiana



*Five-Passenger Fore-Door Speedwell Touring Car—\$2750.
121-inch wheel base, 4 cylinder, 50 H.P. motor on all models.*

You must spend \$4000 to \$6000 to buy the SPEEDWELL'S equal

Speedwell motor cars maintain a middle ground in the matter of price—\$2500 to \$2900.

They are honestly worth what they cost—they are worth much more than they cost according to current standards.

They are honestly worth what they cost, because they possess in an eminent degree that rare quality which constitutes so large a part of motor car value—the ability to withstand the extreme punishment to which motor cars are subjected.

To drive yourself, your family, your friends, in a car, is a great responsibility—a responsibility that will rest lightly on your shoulders if you drive a Speedwell.

You never heard, did you, of a Speedwell axle breaking?

You never heard of a Speedwell steering gear failing in its purpose?

The Speedwell is impervious to those road shocks which are constantly putting the axles, the springs, the wheels, the steering gear, the frame, to the utmost heroic test.

Last year, for instance, a Covington, Ky., Speedwell owner, driving his car along the country road at the rate of fifty miles an hour, collided with a telegraph pole. Bent fenders and damaged radiator were the only evil results to the Speedwell.

With a motor car the unexpected is constantly happening.

Not under \$4000 to \$6000 will you find a car more certain to withstand the incidents and accidents of everyday road use than the Speedwell.

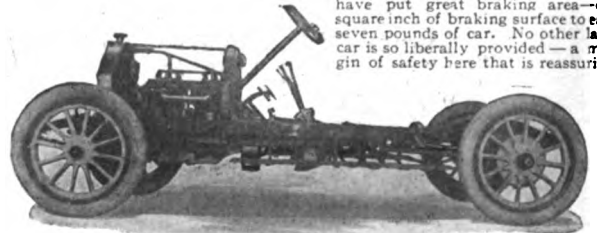
THE SPEEDWELL MOTOR CAR CO.

50 Essex Avenue Licensed under Selden patent. Dayton, Ohio

Principal models exhibited at Madison Square Garden Show, New York, January 7-14

Safety in the Brakes

Safe design is often as important as proper materials. Thus, in Speedwell brakes we have put great braking area—*one square inch of braking surface to each seven pounds of car.* No other large car is so liberally provided—a margin of safety here that is reassuring.



Economy in Transmission of Power

No other car delivers such a high proportion of power to the rear wheels as does the Speedwell. This has been proven by technical test. The straight line drive, here illustrated, is one very important factor. There is no power loss here through disalignment of the driving shafts from the motor to the rear axle—the drive line is straight.

An Example of Superior Design

This is the Speedwell steering knuckle. It is provided with a roller bearing that carries the weight of the car and makes steering remarkably easy. Contrast this with the usual practice—a straight bolt and plain bearing surface at this point—and you must appreciate the superiority of this Speedwell construction.



Our catalog will give you many, many other details of advanced constructional advantages in Speedwell cars.

Send Today for This Literature

Fill out the form herewith and we will send our latest catalog of Speedwell cars in full colors. We will also put your name on our mailing list to receive our monthly magazine, "THE SPEEDWELL," a motor magazine devoted to the performances of Speedwell cars, together with valuable information on the care and upkeep of motor cars.

THE SPEEDWELL MOTOR CAR CO.
50 Essex Ave., Dayton, Ohio

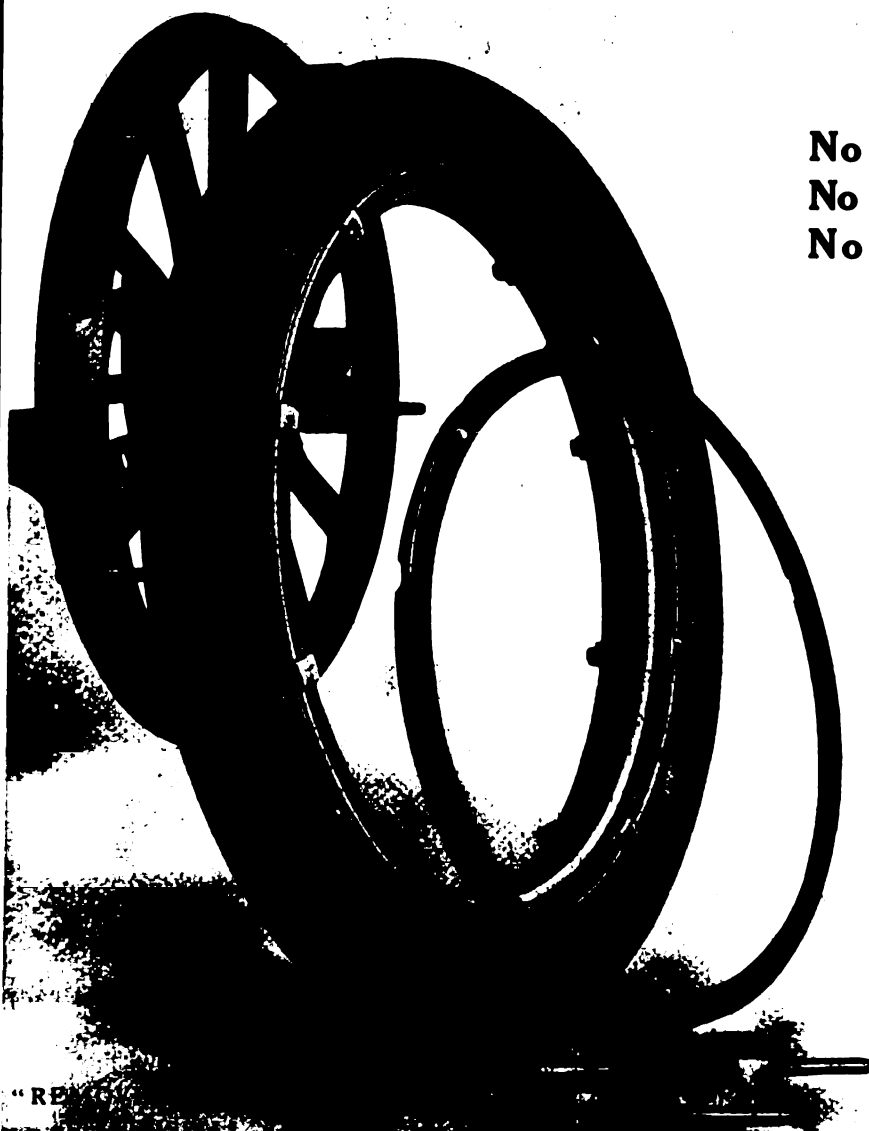
Please send me the literature referred to.

Name.....

Address.....

THE **FISK** REMOVABLE RIM

**Cannot Stick or Bind
Unaffected by Rust or Mud**



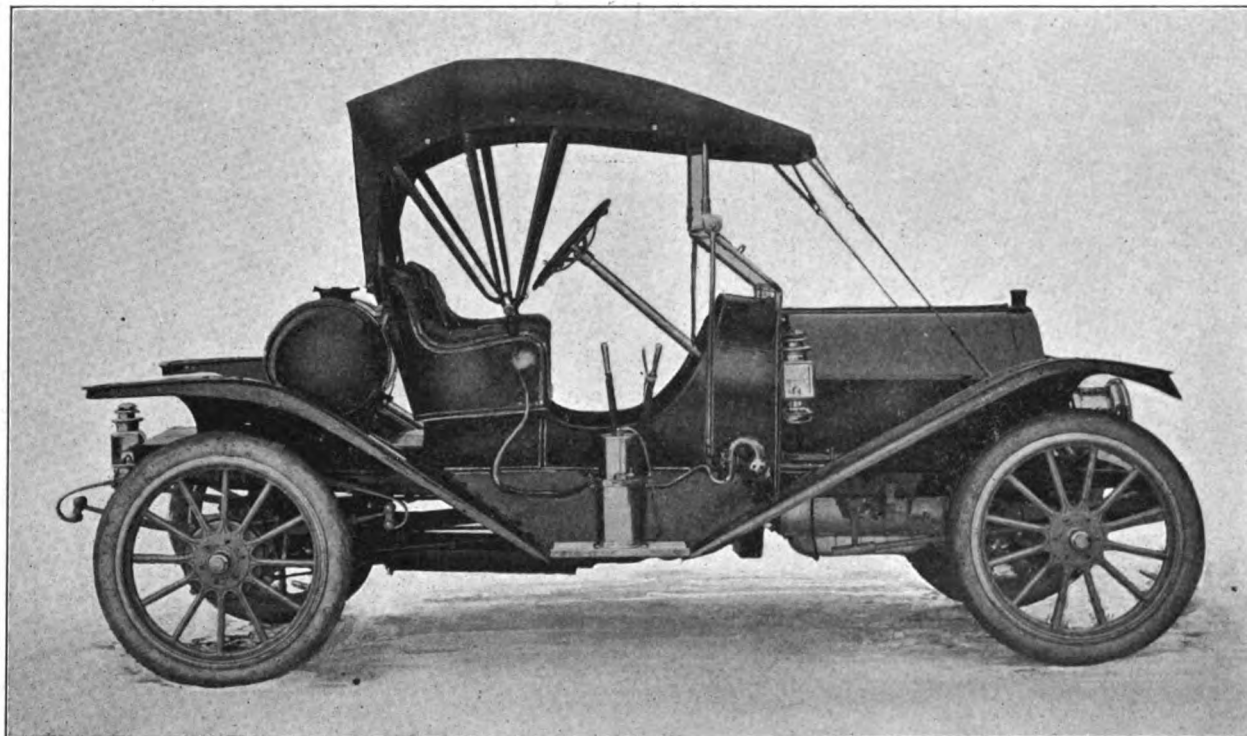
**No Short Staybolts
No Excessive Weight
No Special Tools**

**Madison Square
Garden Show
Space 178-Balcony**

**The Fisk Rubber Co.
Chicopee Falls
Mass.**

*23 Direct
Factory Branches*

Henry "25" The Biggest, Livest Agency Proposition in the Whole Field of Automobiles.



A Car So Attractive and So Good at So Small a Price that it is Upsetting Popular Notions as to the Value of Motor Cars.

We hesitate to tell you of the expensive parts, and the expensive construction contained in this \$900 car. You might be afraid that we can't do it, but we know the automobile business from the ground up. We can do it and we are going to do it.

If you appreciate automobile values and you will look over this car, point by point, you will feel like "shouting" for the HENRY "25."

HENRY "25" ROADSTER, \$900

A big, sound, beautiful Roadster; 25 H. P.; 107-inch wheel base; from radiator to tail lamp as sound as can be made. Beautiful, rakish in design, with 25 gallon gasoline tank, built like a micrometer and finished like a mirror, now ready for our representatives.

A car like this at \$900 is the most surprising offer an agent can make to the public.

Today is the time to get in touch with our organization. We are going to supply the HENRY "25," as many as necessary, to a representative in every motor center in the country, and we are now looking for a few of the right men.

If interested, we will be pleased to tell you all about this unusual opportunity.

The entire line of HENRY CARS is a very complete one, containing the following:

HENRY "25" Roadster \$900, HENRY "25" Touring Car, \$1050, HENRY Standard Roadster \$1750, HENRY "40" Demi-Tonneau \$1750, HENRY "40" Standard 5 Passenger Touring Car \$1750, HENRY "40" Fore Door 4 Passenger Touring Car \$1750, HENRY "40" Fore Door 5 Passenger Touring Car \$1800, HENRY "40" Enclosed Roadster \$1800, HENRY "40" Roadster De Luxe \$2200.

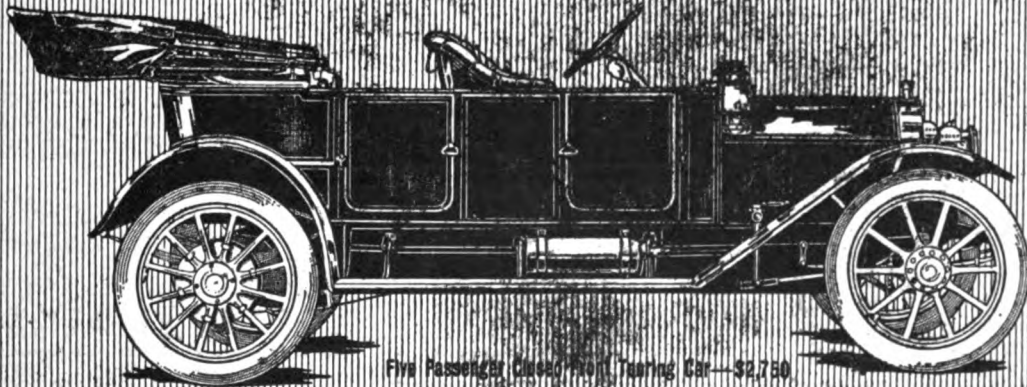
This splendid line of cars will shortly be seen in every motor mart in the country, and perhaps if you speak quickly you may be the envied possessor of some valuable territory on this unusual proposition. Today is the best time to signify your intention of entering the automobile business.

We can make it easy for you.

HENRY MOTOR CAR SALES COMPANY, 1507 Michigan Boulevard, CHICAGO

THE MARMON

"The Easiest Riding Car in the World".



Five Passenger Closed Touring Car—\$2,750.

No other car

can show so many victories in long races in 1910 as the Marmon—and the long race is the supreme test of a car's durability and reliability.

No other car

can show so many new speedway records established during 1910 as the Marmon stock chassis—the kind you buy.

No other car

can show so many long races won without a stop as the Marmon—and this means wonderful tire economy, as well as superiority of design and construction.

No other car

can show a more universally satisfactory record of service in the hands of private owners than the Marmon.

It is of Marmon design and Marmon manufacture completely.

Nordyke & Marmon Co.

INDIANAPOLIS (Estab. 1851)

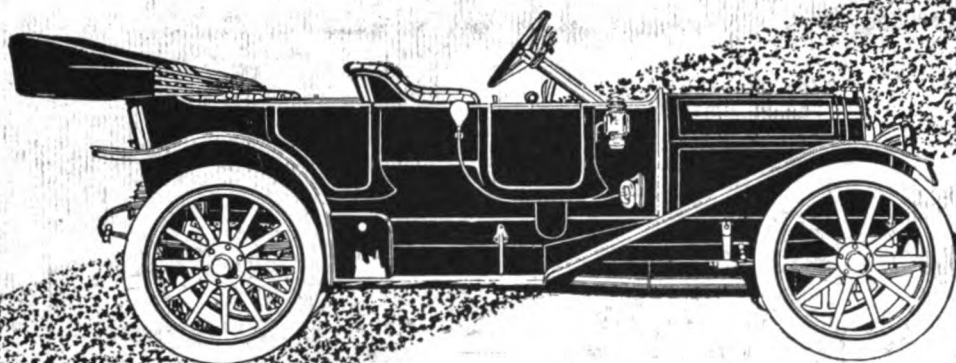
INDIANA

Sixty Years of Successful Manufacturing.



DESIGNED UNDER BELDEN PATENT

Fore-Door
Demi-Tonneau



You Can Show Features Your Customer Cannot Equal Elsewhere

NOT just a few but many—everywhere about this blue-blood motor car, the one perfectly standardized \$1500 motor car, the motor car of this price that is replete with the features of cars costing up to \$4000, the motor car that tests way above its rating, that will do more than you guarantee.

This \$1500 is a small amount of money for a fully-equipped Abbott-Detroit, but a large amount of money for anyone to spend on one out-and-out purchase. Your customer must be shown and in the Abbott-Detroit you show him the greatest value in a motor car of this price in the world.

Abbott-Detroit

Because our car is sold fully equipped, excepting top and windshield, at \$1500, places it very much ahead of the advertised \$1500 cars whose "extras" bring the price several hundred dollars higher. The agent closes a sale much easier than he does when he has to explain about "extras."

The dealer who gets the Abbott-Detroit Agency for his territory has an advantage over all others. You want this advantage if you can get it, and your next best move is to write us at once for the Book of the Abbott-Detroit and our Special Agency Proposition.

Model B. Five-Passenger Touring Car, Standard Equipment, \$1500 F. O. B. Detroit.

Fore-Door Five-Passenger Touring Car, Standard Equipment, \$1550 F. O. B. Detroit.

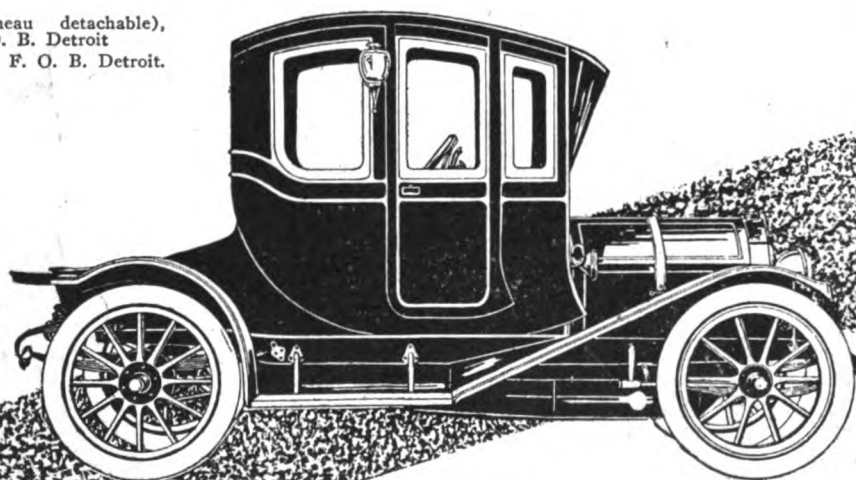
Roadster, Standard Equipment, \$1500 F. O. B. Detroit.

Fore-Door Demi-Tonneau (tonneau detachable), Standard Equipment, \$1650 F. O. B. Detroit.

Coupe, Standard Equipment, \$2350 F. O. B. Detroit.

ABBOTT MOTOR COMPANY

143 Waterloo Street, Detroit, Michigan

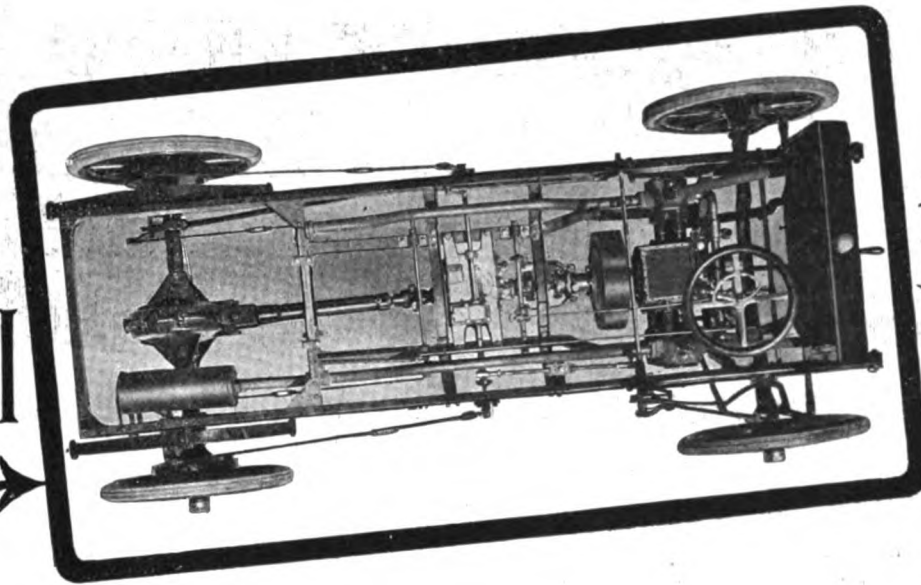


Coupe

All models exhibited 11th Annual International Automobile Show, Grand Central Palace, New York City, December 31-January 7, ground floor, Section N.



A Powerful



Driving Plant

Our 1911 chassis shows many important improvements, prominent among which are the following:

Motor increased to 24 H. P. and equipped with a governor set at 1100 r. p. m. that prevents exceeding 15 miles an hour empty, yet allows fully this speed under full load. Racing engine and abusing car is impossible.

Ignition: High tension magneto and timer, but entirely separate of each other. Engine equipped with a double set of spark plugs for each system, which produces a positive ignition and eliminates the many troublesome details that have to be attended to on the usual ignition system.

Positive Lubrication provided for by means of a base oiler, run by a gear pump, which throws a continuous stream of oil on each bearing. No exposed oil tubes to break or clog up.

Transmission: Selective type sliding gear, with three speeds forward and one reverse has been adopted. These gears are of imported German chrome nickel steel, case hardened. Our

Cone Clutch is faced with Thermoid lining, a

material that wears almost indefinitely and sets the parts in action gradually, without jerking.

Double Brake System, internal expanding and external contracting.

Shaft Drive: We are the originators of the direct shaft drive for power wagon use, this form having clearly proved its fitness for this heavy class of work. We have reduced the gear ratio to 7-1, greatly increasing its power. It easily negotiates any hill, or mud or snow covered road.

These and many other improvements go to make the Monitor a marvel of unparalleled pulling power, ease of manipulation and low fuel consumption.

Send for Complete Specifications and prospectus showing the complete line of Monitor Commercial Cars and testimonials of users.

Chicago Auto Show, February 6-11, 1911.
Visit section "N," main floor of Coliseum—
see the new Monitors—meet our people and
get acquainted.

MONITOR

Commercial Cars

Designed Right

Built Right

Priced Right



**MONITOR
AUTOMOBILE WORKS**

214 N. Academy St. JANESVILLE, WIS.

A correction—Our December ads stated that the Monitor finished the Chicago American Run with 25% load. This should have read "25% overload."

Warren-Detroit 30

It Isn't the PRICE that Distinguishes Warren Cars — It's the QUALITY

It may not be amiss here to recall the fact that the history of Warren-Detroit automobiles is a history of rapid progress and steady success.

In hill climbs, in races, in economy tests, endurance tests and in every other form of motor contests Warren cars have been notably successful.

And they will continue to be so because where QUALITY and EFFICIENCY go hand in hand, as they do in Warren-Detroit cars, success is inevitable.

It is the Warren IDEA to "be sure of the QUALITY—efficiency must follow." The Warren organization and Warren cars are built around the Warren idea.

Thus not for one minute do we believe in standing still. Compare the 1911 Warrens with those built in 1910 and you'll get exactly what we mean. Continuous refinement, continuous improvement is the order of the Warren Factory.

Where we had TWO models in 1910 there are EIGHT for 1911. Every one of these models is built on the same Warren "30" chassis. The prices range from \$1200 for the Roadster to \$1750 for the roomy, comfortable, smart Coupe illustrated below.

If in some way it should dawn on you that automobiles built with the QUALITY idea first and foremost are likely to be better than those built around the QUANTITY idea, it would be a mighty good idea to investigate the Warren-Detroit LINE.

If convenient, see the Warren cars at the Grand Central Palace Show. You'll find it worth while. In any case write for the Catalogue.

Inside Drive Coupe—
35 x 4-inch tires—
Bosch Magneto, Elec-
tric Headlights, Stor-
age Battery, etc.

\$1750

f. o. b. Detroit.

WARREN MOTOR CAR COMPANY

397 Holden Avenue
DETROIT, MICHIGAN



Warren-Detroit 1911

First of All QUALITY—Because Quality Means Efficiency— Reliability, That's the Warren IDEA

If you haven't read the page opposite you had better take a glance over it. The Warren story is worth reading, but we can't begin to tell it all even in two pages.

The best way to let you know about our ideals and what we are doing, and why that should be of more than passing interest to you, would be to have you visit us at the factory.

The next best is to meet you at the show, where the full line of Warren cars is on exhibition and where you can verify each and every one of the claims made.

But, supposing you can't do either—what then? Whether you are looking for an agency that spells PROFIT or a car that spells SERVICE, write us. Get in touch with Warren-Detroit cars somehow.

Here is the list of Warren-Detroit models for 1911—Note that all are built on one standard chassis—with special modifications in the case of cars designed for delivery service.

Roadster, with 30 gal. Round Gasoline Tank	Standard Five-passenger Touring Car	Inside Drive Coupe....
\$1200	\$1325	\$1750
Roadster with Dickey Seat	Touring Torpedo Type.....	1000 lbs. Delivery Car, Pan-eled Express or Open Ex-press Body
\$1200	\$1500	\$1300
Demi-tonneau	Fore Door Touring Car	
\$1300	\$1500	

If you are a dealer you will find here just the "line" that meets the needs of your territory. And if you study Warren cars you will be delighted at the correct, graceful body designing. No cars within several hundred dollars of the price compare with them.

You'll find the new ideas—the styles that make people sit up and take notice—the QUALITY that makes them buy. And you'll find—but, see the cars at the show, or write for Catalogue and full information.

WARREN MOTOR CAR COMPANY

397 Holden Avenue, DETROIT, MICH.

Touring Torpedo with Electric Headlights, Storage Battery, 35 x 4-inch tires, etc.

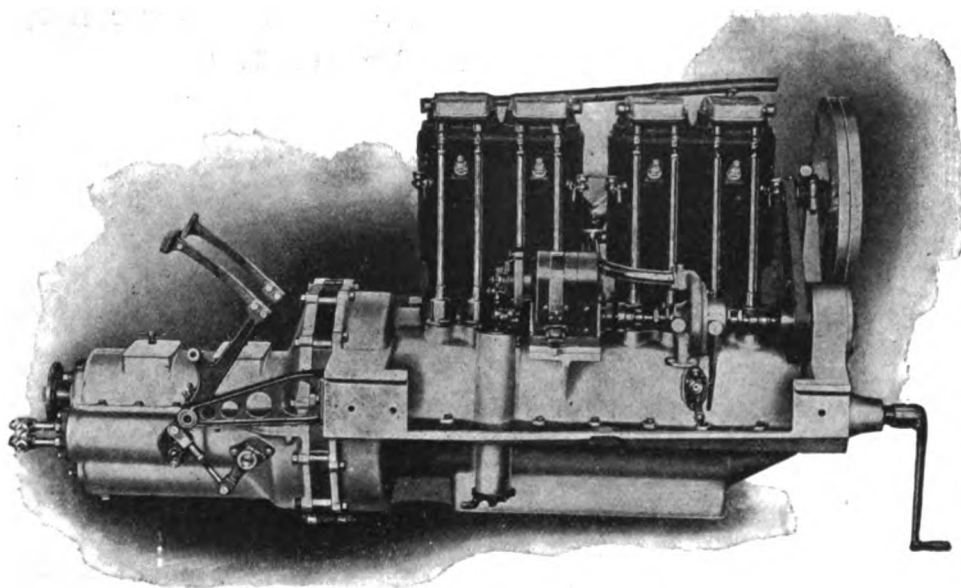
\$1500

f. o. b. Detroit.



Cunningham

A Four Cylinder, Four Cycle Motor Car of 40 Horse Power



The Cunningham car, backed by the reputation and experience of a Company which has been successful in vehicle construction since 1838, enters the broad field of the automobile industry today without fear of competition in any class, at any price. We are prepared to convince the biggest, broadest and best automobile men in the industry of these facts. To the dealers who are looking for a future that really means success we say, "Let us show you the Cunningham."

The Cunningham power plant is the highest development of the unit plant construction, containing motor and transmission in one rigid piece. The motor is long stroke 4 3/4 inches by 5 3/4 inches. The valves are very large and are set in cages in the cylinder heads. Surmounting

the rocker arms and the valve mechanism are aluminum caps which not only reduce noise, but also exclude dust and foreign matter. This is an exclusive feature of Cunningham construction.

With the exception of a few standard specialties, such as Bosch Magnetos, Timken Axles and F. & S. bearings, the Cunningham car is made entirely within the walls of our own modern plant. The question of standardization and absolute interchangeability of parts is a most prominent feature in the car construction. All bearings and gear surfaces are generously large. The car delivered at the price of \$3500 is absolutely complete with every equipment and ready for immediate use. Write for details.

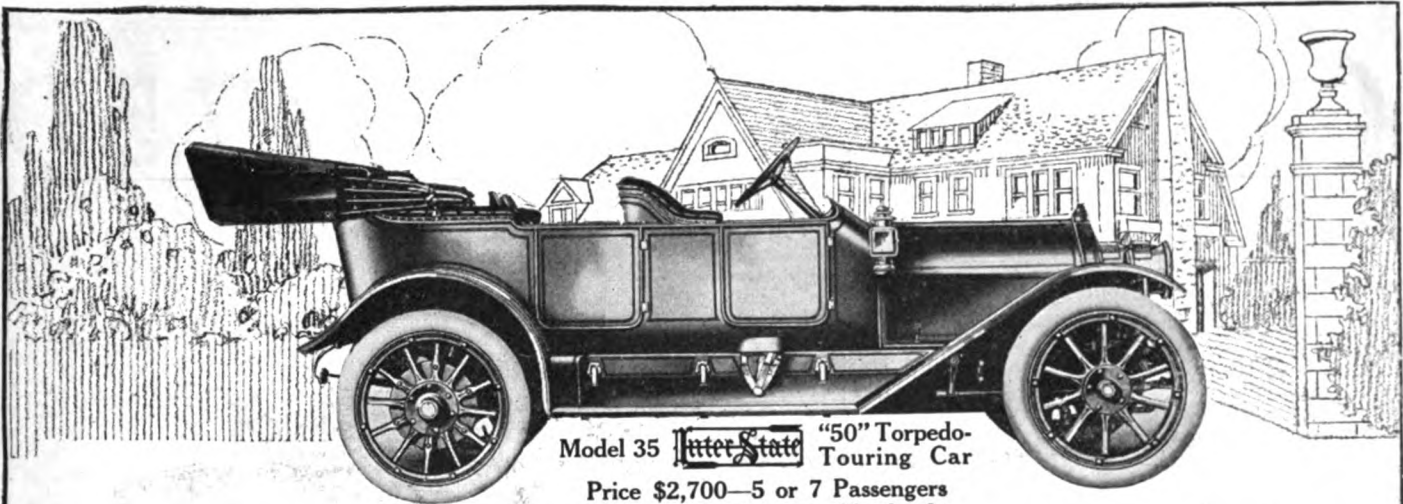
JAMES CUNNINGHAM, SON & COMPANY

16 Canal Street (Desk D), ROCHESTER, N. Y.

CHICAGO BRANCH: 557 Wabash Avenue

Exhibitors at Grand Central Palace, December 31 to January 7





Model 35 **Inter-State** "50" Torpedo-Touring Car
Price \$2,700—5 or 7 Passengers
Complete Equipment—Absolutely

Mighty Merit of **Inter-State** "40" Caused Demand for Larger "50" Car—Here are Both

Here is a significant fact to both Automobile Dealer and Customer:

THE sensational value of our medium-sized "40" produced a nation-wide clamor for this same "Inter-State quality" in a bigger, more powerful car.

The new Inter-State 5 or 7-passenger "50" Torpedo-Touring Car is our answer to that insistent demand. The big beauty is now ready for more dealers and more waiting customers. Four additional acres of factory floor space have made this greater output possible. Dealers and customers who have been disappointed, and others, neglected by our inability to furnish more "40's" for the market, can now be supplied.

Both "40" and "50" models are today being manufactured in our factory in quantities sufficient to fill the increased demand for the highest motor car quality at fair and reasonable cost.

Inter-State Sets Standard for Value

The "40" at \$1,750 and \$2,000 and the new "50" fully equipped at \$2,700 set the standard in motor car values. These are the prices that *should* be paid for the best of everything in materials—the utmost in performance—which you get in the INTER-STATE. *Greater motor car value cannot be purchased.*

The Inter-State Policy

We have been mighty busy supplying the demand for our cars since the first we produced three years ago. We have never been big advertisers—never has there been any necessity for our creating a greater demand than we could supply.

We have simply progressed in our quiet way—no fireworks—no noise—testing carefully and slowly each car that leaves our factory. Too much haste would harm our cars—would react on us. In some localities the Inter-State predominates—more Inter-States than there are any two makes of cars. In other places the Inter-State is less extensively known for the simple reason that we have not had enough cars to develop and supply those particular fields.

INTER-STATE AUTOMOBILE CO., Muncie, Ind.

Branches: Boston, Mass., 153 Massachusetts Avenue; Omaha, Neb., 310 South Eighteenth Street

Licensed Under
Selden Patent
(60)

The Inter-State "50" at \$2,700 Includes Full Equipment

"Full Equipment" with us means that when you buy this "50" car it is completely equipped. You purchase in the new "50" for \$2,700 the utmost motoring luxury.

With the "50," full equipment consists of silk mohair top, two extra seats, horn, speedometer, wind shield and clock; black enameled Solar lamps with finest, most powerful lenses; black enameled combination oil and electric dash and tail lamps. Prest-o-lite tank, tire irons, completely filled tool box, extra demountable rim, foot and robe rail and storage battery for lighting.

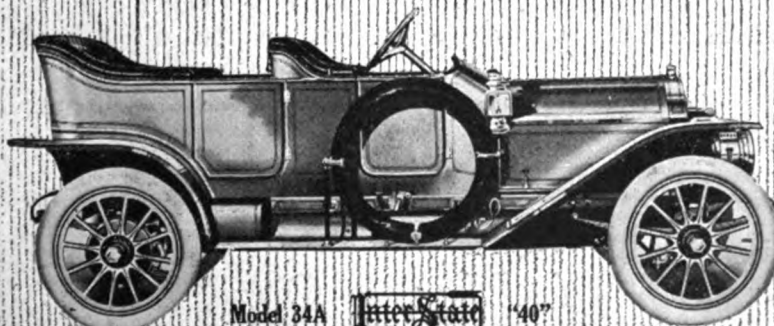
Equipment of 34A "40" Includes

two Solar gas headlights with Prest-o-lite tank, combination oil and electric side lamps and electric tail lamp, one special storage battery for lighting, exhaust horn, tire irons on side, foot and robe rail attached, leaving other side free for accessories. Upholstered in finest quality Spanish leather.

Catalog for Customer—Attractive. Offer for Dealer

While you think of it, just tear off the reminder below. Mark on reminder whether you want catalog, dealer offer or both. *Positively the best value in motordom awaits you in the Inter-State.*

See us at the Automobile Shows:
New York—Madison Square Garden, Balcony,
No. 201. Chicago—Coliseum Annex, P-1.
Boston—Spaces 136 and 142, Mechanics Bldg.



Model 34A **Inter-State** "40"
5-Passenger Torpedo-Touring Car—Price \$2,000

Inter-State Touring Cars

A Reminder

Inter-State Automobile Co., Muncie, Ind.

☐ Send me particulars ☐ Send me Dealer Offer
Mark X before your request.

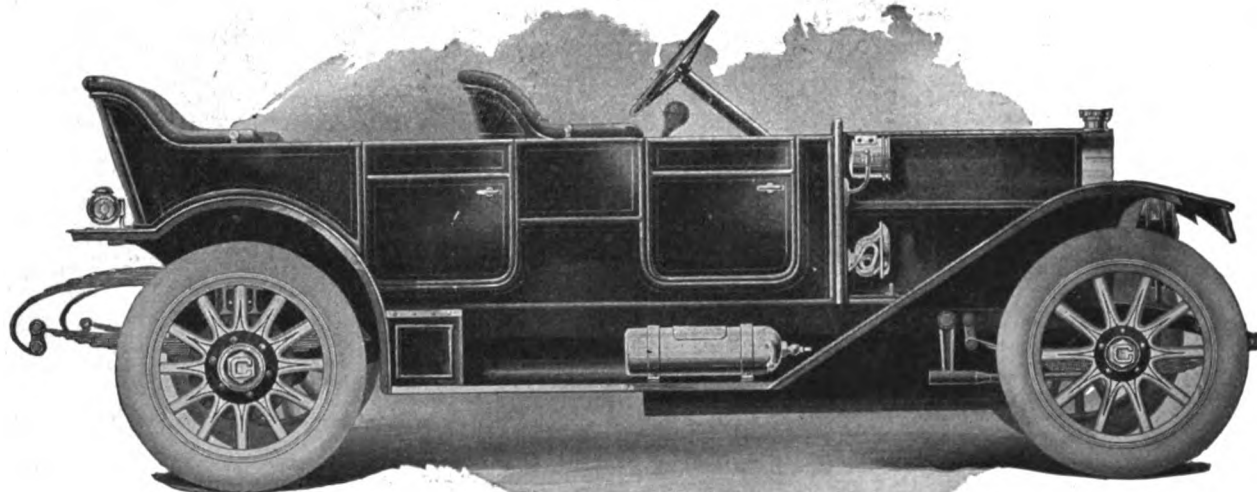
Name

Address

(M.W. 15)

THE COLBY \$1750

Built to Compete with \$3000 Machines



SPECIFICATIONS

Body: Standard touring straight line. Seating capacity, five. Fore-doors.

Motor: Four Cylinder—H. P., 35-40. Bore, 4 $\frac{1}{4}$; stroke, 5 $\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.

Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.

Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system.

Carburation: Carburetor—special fuel feed—gravity.

Clutch: Type—multiple disc. Friction surfaces—steel to steel.

Gearset: Selective—located amidship. Three speeds forward.

Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.

Bearings: Crankshaft—three large, plain. Camshaft—three, plain. Clutch—spindle, plain. Clutch—thrust, ball. Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball. Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white brass.

Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36x4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type. Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.

Demountable Rims:

Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.

Control: Hand levers on steering wheel and foot accelerator.

Price: \$1,750, f. o. b. Mason City.

Vital Points of Real Superiority

Big and powerful in appearance, real 1911 fore-door body (not 1910 body with fore-doors added), long, straight lines—superior finishing and equipment.

Big power back of the appearance. 40 full horsepower—enough to take you anywhere, over any country, in any weather, without strain to yourself or your car.

Extra long wheelbase—121 inches—insuring the maximum of roominess and easy-riding qualities.

Big wheels with 36-4 inch tires—a further guarantee of easy-riding and reduced cost of maintenance.

Demountable Rims—if you knew what a wonderful convenience these were, you wouldn't consider the ordinary kind on your car.

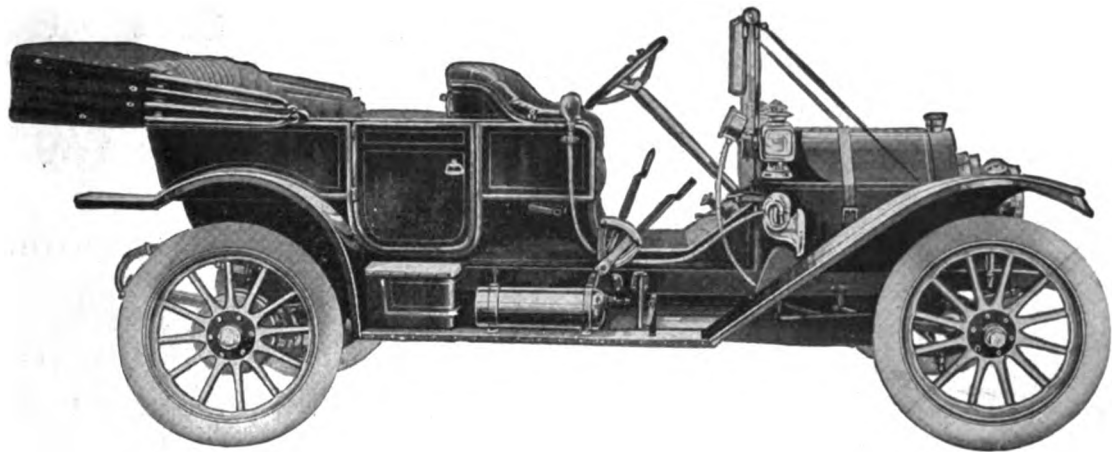
A price that marks a revolution in car values—\$1750.

These, in addition to marked superiority of design, material and workmanship, take the Colby entirely out of the field of competition, either with other cars of its price, which cannot approach it in quality, or other cars of its quality, which are never sold at its price.

Our 1911 output is limited. We therefore advise an early investigation and reservation of territory.

Watch for us in the Coliseum basement—Booth No. 3—at Chicago from January 28 to February 11.

COLBY MOTOR COMPANY, Mason City, Iowa



We are particularly anxious
that those who visit the

Haynes Exhibit

at the

Garden Show

shall give these cars the most rigid examination possible.

Only in this way can the relative superiority of the superb Haynes be fully appreciated.

Those who are not experts are invited to bring experts with them.



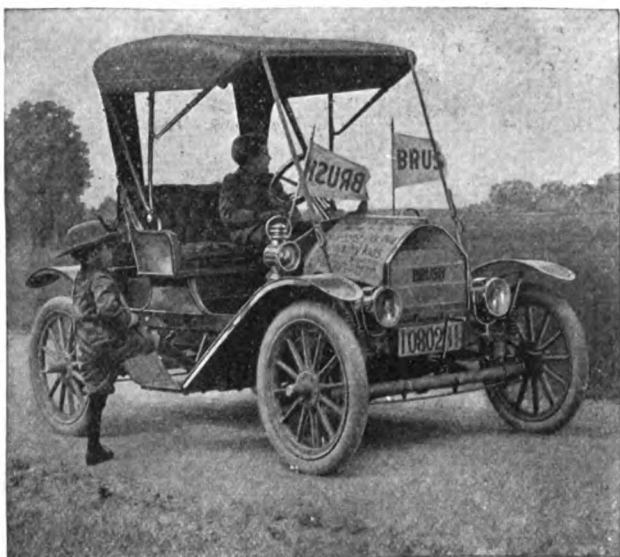
Haynes Automobile Company

Licensed under Selden patent.

Station C

Kokomo, Indiana

Abernathy Kids at the Automobile Show



The famous Abernathy Kids will be at the Brush exhibit every day of the Automobile Show.

They will tell the story of their driving a Brush Runabout 2546 miles from New York to Oklahoma when they returned from meeting Roosevelt.

There is a lesson in this demonstration of Brush simplicity and reliability which will be made clear to every visitor who calls at the Brush exhibit.

Louie Abernathy has written a book about the trip — the horse-

back ride from Oklahoma City, the stay in New York, impressions of Roosevelt and their now famous ride home in a Brush Runabout.

A copy of this book will be presented to every visitor by the "Kids" themselves.

Don't miss a chat with these boys. They will be the "Talk of the Show."



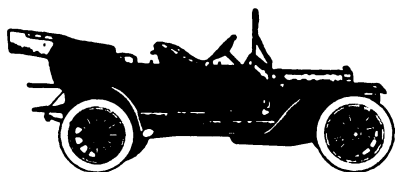
Copyright, 1910, by Underwood & Underwood, N.Y.

BRUSH RUNABOUT COMPANY, Detroit, Mich.

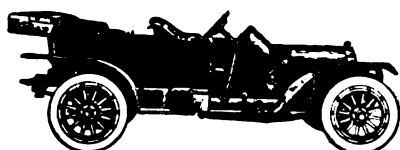
(Division of United States Motor Co.)

Licensed under Selden patent.

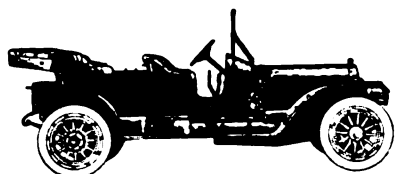
There is a Knox Car for Every Motor Service You May Need



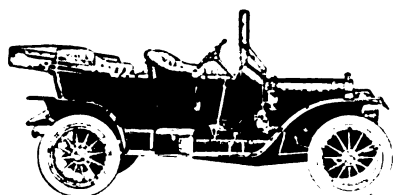
1911 Knox Model "R" 40 H. P., 7-Passenger Touring Car, Series B. Price fully equipped, \$3500.



1911 Knox Model "R" 40 H. P., 4-Passenger Torpedo Car. Price, fully equipped, \$3400.



1911 Knox Model "S" 60 H. P., 5-Passenger Tonneauette, Regular front. Price, fully equipped, \$4900.



1911 Knox Model "R" 40 H. P., 4-Passenger Tonneauette, Series A. Price, fully equipped, \$3350.

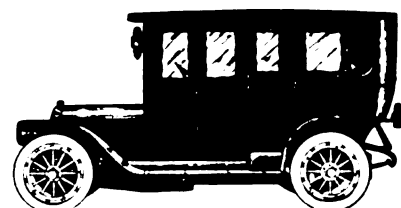
For the social obligations, the theater and shopping there is a richly appointed Knox Limousine with deep tufted cushions and restful springs.

For touring in the open country there is a variety of enclosed bodies with high fore-doors on the Torpedo plan. Fully protected from wind and weather in a Knox fore-door Touring Car you will realize as never before that the standard high grade automobile is a blessing for health and delightful recreation.

And for those who care for speed the 70-mile-an-hour Knox Raceabout, hung low with short wheel-base, will fully answer every craving.

The finish on all Knox cars is flawless. Four hundred dollars cannot replace the standard equipment furnished with every model. The nickel and German Silver trimmings have an individuality that is worth while.

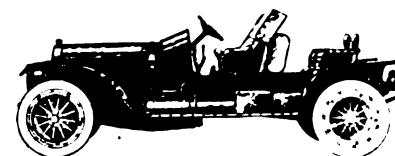
Ten years motor car manufacturing experience is worked all through the mechanism. The best material money can buy is used throughout the chassis, while the workmanship is all New England—the home of the micrometer.



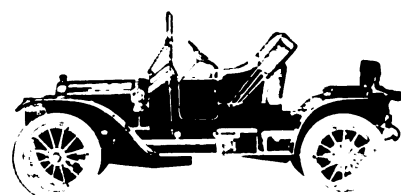
1911 Knox Model "R" 40 H. P., 7-Passenger Fore Door Limousine. Price, fully equipped, \$4400



1911 Knox Model "S" 60 H. P., 7-Passenger Touring Car, Series B. Price, fully equipped, \$5000.



1911 Knox Model "S" 60 H. P., Double Rumble Raceabout. Regular front. Price, fully equipped, \$4800.



1911 Knox Model, "R" 40 H. P., Double Rumble Raceabout, Series A. Price, fully equipped, \$3300.

A New Catalog is at Your Request

KNOX AUTOMOBILE COMPANY
SPRINGFIELD Member A. L. A. M. **MASSACHUSETTS**

OVER 50 % OF
**American
Automobile
Manufacturers**

ARE USING
**GEMMER STEERING GEARS
EXCLUSIVELY**

*(80 % of American Winning Cars in 1910 Racing Events -
Were Steered By Gemmer Gears.)*

*If You Are Not Among This Number
Would It Not Be Exceedingly Good Business
To At Least Determine Why Such A -
Large Proportion Of Manufacturers Deem
It Wise To Specify Gemmer Gears?*

**GEMMER
MANUFACTURING
COMPANY
DETROIT**

Marion

"Thirty"

30 Horsepower
110-inch Wheel Base

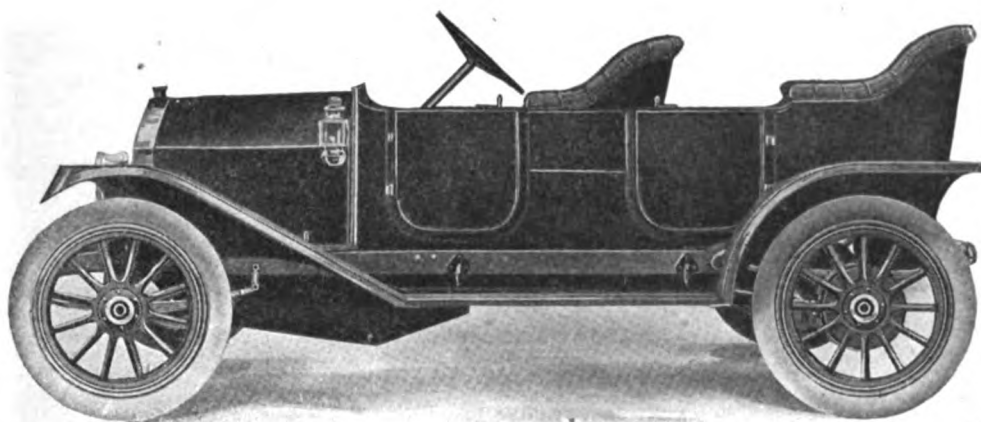
Roadster Style,
\$1,000

Torpedo Roadster,
\$1,050

5-Passenger
Touring, \$1,150

5-Passenger
Fore Doors, \$1,200

Headlights and
Magneto Included



Marion

"Forty"

40 Horsepower
115-inch Wheel Base

Roadster Style, \$1,600

Torpedo Roadster,
\$1,650

4-Passenger Close-
Coupled, \$1,600

5-Passenger
Touring, \$1,650

4-Passenger Coupe,
With Extra Body,
\$2,000

Limousine, \$2,500
Headlights and Bosch
Magneto Included

With 30 Horsepower—110-inch Wheel Base—\$1,200.

See the Thousand-Man Car

You will find no other car in the city so interesting as the Marion for 1911.

For these new Marion models which are now on exhibit show all the best ideas of a thousand designers. You can see all the greatest features which this industry has developed in this one composite car.

It is the product of a thousand brains.

All the Best Ideas

Eight years ago we started out to combine in one car all the best ideas that developed.

We had our own designers, our own engineers. Six of the ablest in America have worked on Marion cars. And they invented some features which no other man has excelled.

But their main duty has been to put other men's ideas to a test. They have watched every improvement, every bettered material, every new device. They have compared one with another—in road tests and contests—until they absolutely knew which was best.

These men have smothered their own pride of invention. When any man anywhere devised anything better they bought or adopted that man's idea.

The one idea has always been to have

every feature in the Marion car the very best of its kind in existence.

For eight years we have worked with that one idea. Each important feature has been compared with others over thousands of miles of road. Each has been tested in many national contests. And thousands of Marion owners have helped us make the comparisons.

It is very interesting to see the final result in the Marions for 1911.

The Men Who Helped

We gladly give public credit to the men who have helped us most.

The motor in our "Forty" is the latest Continental creation. The engine in our "Thirty" is made for us by one of our largest competitors. They ask us not to state the name.

These engines—in more than fifty thousand famous cars—have proved themselves the best engines made. No other engines have done so much to build up great reputations.

We use the Kinsey pressed steel frames, the Warner differential, the Warner steering gear. We use the Stutz transmission, the Timken bearings, the Splittorf and Bosch magnetos. And we use the Sheldon springs—the costliest springs made in America.

These things we buy because we have proved them better than anything we can make. We make in our own shops only such parts as we can make better than others.

Cutting the Cost

Every Marion feature—whether we make it or buy it—has been adopted without regard to cost. If we knew anything better at double the price we would get it.

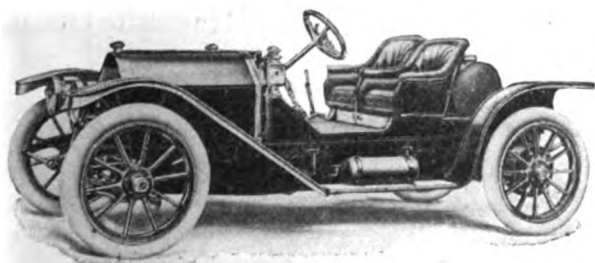
But other men have worked equally well to cut selling cost and overhead expense. We believe there is no other car where so much of the price goes into the making cost.

The 30-horsepower Marions, as a result, sell for \$1,000 to \$1,200. The wheel base is 110 inches. The price includes headlights and magneto.

The Marion "Forty," with 115-inch wheel base, sells for \$1,600 and \$1,650. Compare that with other 40-horsepower cars. The car nearest this "Forty" in style and features is selling for \$2,850.

Come and see these Thousand-Man cars. Let us explain why each device was adopted—how we proved it better than others. If you cannot come, please write for our catalog, showing all the new Marion models.

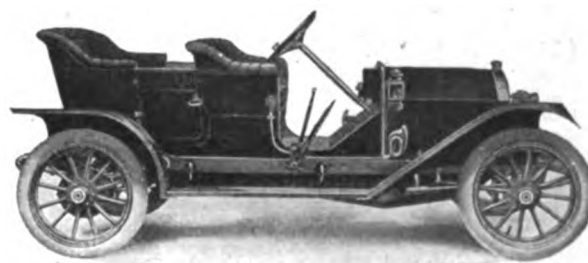
THE MARION SALES COMPANY, Indianapolis, Ind.



With 30 Horsepower—110-inch Wheel Base—\$1,000
With 40 Horsepower—115-inch Wheel Base—\$1,600

Marion

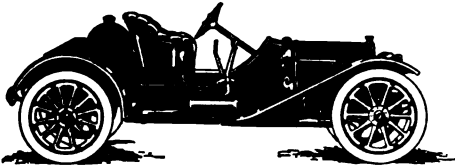
Licensed
Under
Selden
Patent



With 30 Horsepower—110-inch Wheel Base—\$1,150
With 40 Horsepower—115-inch Wheel Base—\$1,650

1911 Bergdoll

BACKED BY MILLIONS "30"



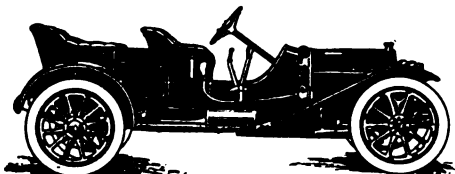
"LOUIS J." RUNABOUT, \$1,600



TOURING CAR, \$1,500



ROADSTER, \$1,500



TOY TONNEAU, \$1,600

IN offering our 1911 car for the public's approval we are doing so after two years of experimental work, embodying in a popular priced car all the practical features and advantages of the best foreign and domestic development.

In design and construction the Bergdoll "30" is simplicity itself and will give the reliability, efficiency and comfort of cars of double its market value. In manufacturing nothing has been forsaken that has proven its worth and we have adopted nothing without the most relentless tests. It is not remarkable in any one particular at the expense of all others and will meet the reasonable requirements of the average automobilist.

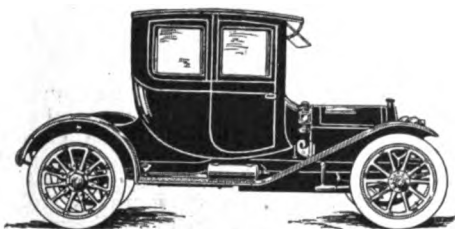
Contrary to the customary rule of building from one to three experimental cars, we built fifty of these machines and put them into taxicab service and they were turned over to inexperienced operators. These cabs at this writing have covered from seven to ten thousand miles with the best results.

One of the strongest claims which we make to any prospective buyer of our product is that we recognize our obligations to that customer as only beginning when he contracts for one of our cars, and we make every possible effort to care for each owner and see that he continues to obtain from his cars the satisfaction that he is entitled to.

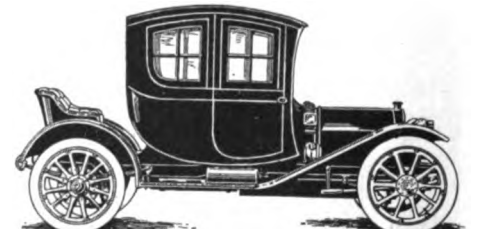
We consider the buyer the "court of last resort," and from his decision as to the merit of our car there is no appeal. The satisfied owner is the best salesman, and it is our hope to have fifteen hundred persons this coming season involuntarily selling Bergdoll "30's" to their acquaintances by explaining the points of superiority and proudly demonstrating their efficiency.



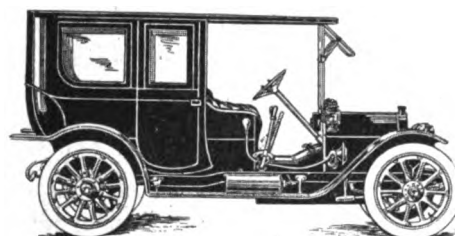
"4 DOOR" TOURING CAR, \$1,600



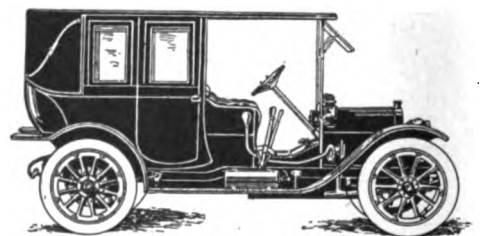
COUPE, \$2,000



COLONIAL COUPE, \$2,500



LIMOUSINE, \$2,500



TOWN CAR, \$2,600

Louis J. Bergdoll

President.

We will exhibit at the 11th Annual International Automobile Show, Grand Central Palace, New York City, from December 31st to January 7th. Our exhibit will be located in Section "G" on the Main Floor.

DELIVERIES ARE BEING MADE ACCORDING TO SCHEDULE

Complete Description and Specifications Appear in Our Advance Folder.

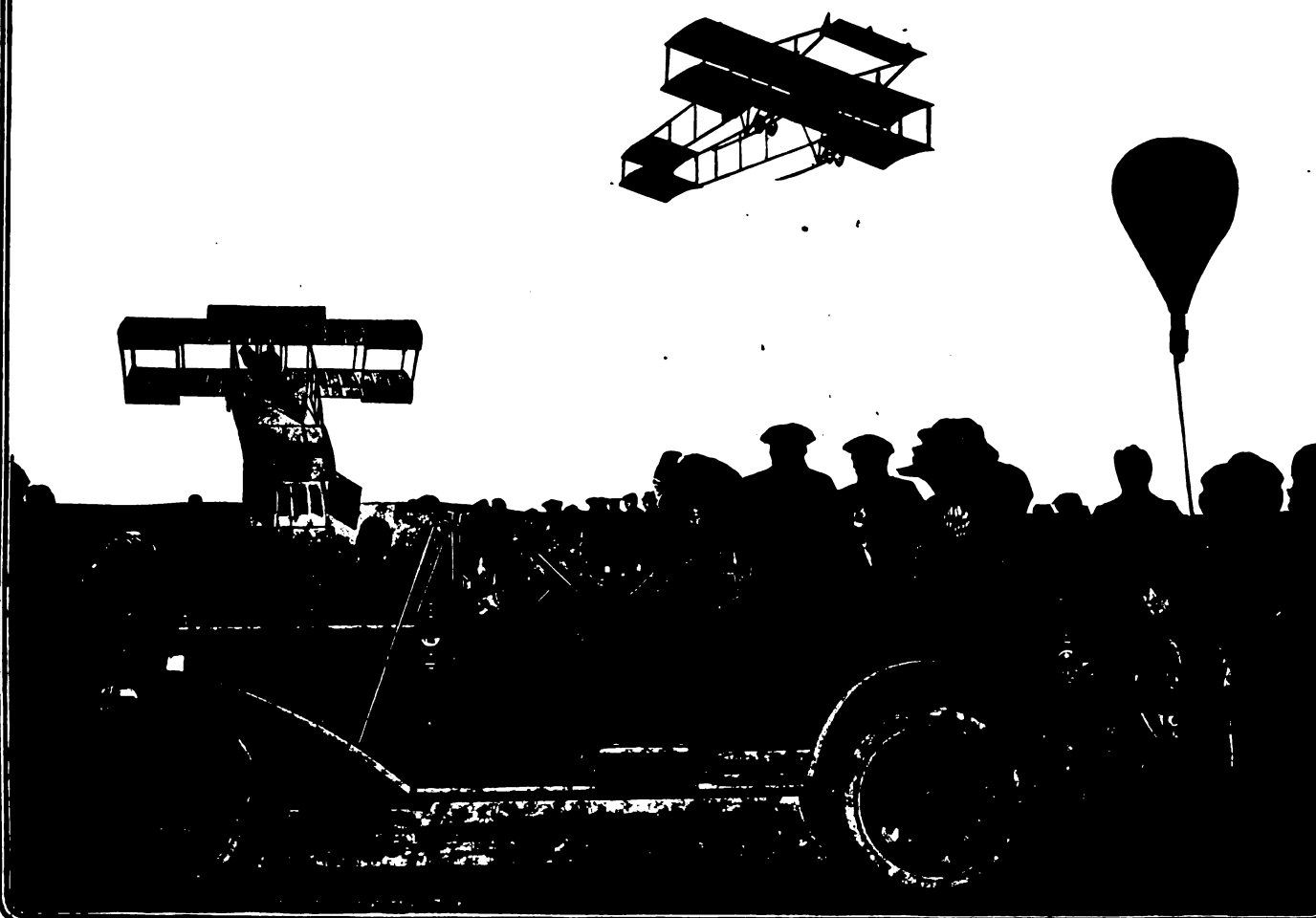
LOUIS J. BERGDOLL MOTOR COMPANY

31st and Dauphin Streets

Department "S"

PHILADELPHIA, PENNA.

Stevens-Duryea



RESPONSIVENESS to the touch of a lever—power, speed, smoothness of action, luxury, endurance—the very things which constitute character and worth in a motor car—are concentrated in the make-up of the 1911 STEVENS-DURYEA SIX. THE EVOLUTION OF AN IDEAL THROUGH TWENTY YEARS OF PROGRESSIVE DEVELOPMENT.

Carefully examine our exhibit at A. L. A. M. Show, Madison Square Garden,
New York City, Stand No. 13—Main Floor.

Stevens-Duryea Company

-

Chicopee Falls, Mass.

Licensed under Selden patent.

Reo Proof

Plenty of it every year—but see what the 1911 Reo did within a few months of its coming out!

The Reo at \$1250 says it does the work of a \$3000 car, and is ready to prove it. A great deal to say and a great deal to prove; but no car at \$3000 or less can show such a record as the 1911 Reo has already done.

Endurance Won the Kansas City Star Trophy against all of the best American cars, in what proved to be the most strenuous and complete test of a motor car during the present year. The highest road score, the highest mechanical score, without regard to price or class.

Won the Kansas Magazine Endurance Contest. Easily won in its own class, and had a better record than any car in any class.

Hill-Climbing Beat best previous record for Mt. Hamilton (24.5 miles) by 10 minutes. Reo time, 1 hour 5 minutes. Would have done even better but for dangerous rain and fog.

Racing In a 50-mile race near Denver the Reo beat a Chalmers, well known for its racing record, by 10 minutes, making the distance over sandy roads in 57 minutes 43 seconds—an average of 51½ miles in an hour. At the Empire City Track race, on November 12th, at Yonkers, New York, the Reo won the 10-mile race against much higher-priced cars. Owing to heavy rains the track was heavy and sandy, but the Reo time was 13 minutes 52 seconds.

Across the Continent in 10½ Days The Reo beat the record of a \$4000 six-cylinder car by nearly 5 days, making the trip in 10 days 15 hours 13 minutes. A wonderful performance!—Nearly 4000 miles, and half of it through deep mud and sand, trackless deserts, deep wash-outs, and over mountains. And not a thing done to the Reo engine the whole trip except to change one spark-plug.

Here are proofs of four kinds: power, speed, endurance, reliability. Is there anything else you want to know in the way of proof and reasons? Find it in the Reo catalogue. Send also for "Coast to Coast in 10 days."

Reo Fore Door Touring Car \$1350

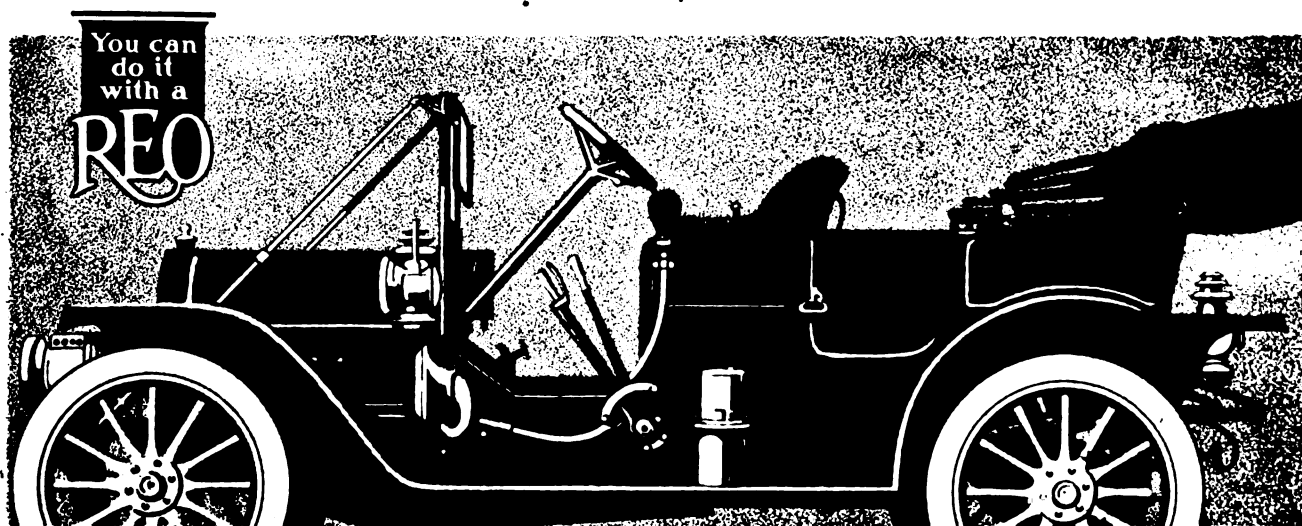
Reo Touring Car or Roadster \$1250

Reo Two-passenger Roadster \$1050

Reo Limousine or Landulet \$2000

R M Owen & Company Lansing Mich General Sales Agent for Reo Motor Car Company

Licensed under Selden Patent



Special Notice to the Trade

A chain of Service Stations will place complete stocks of tires and accessories constantly within immediate reach of all dealers selling

Diamond TIRES

Casings

Tubes

Accessories

Every facility of our completely equipped Service Department is placed practically at the elbow of the distributor.

Our own offices and men will be right at hand to adjust any claims of tire users, maintaining in full our guarantee.

The dealer will be able to obtain any size of tire desired at any time. He will not have to tie up funds or working capital in large stocks, yet will always be able to supply his trade with perfect goods. His bugaboo of vast variety of sizes and types of tires demanded is eliminated. His buying keeps step to the minute with his demand.

Tire users, as well, will find Diamond tires constantly available and both user and dealer will save time and money and be assured of greater convenience.

For many months this company has been working out the plan herein announced.

OUR OWN SALES HOUSES AND SERVICE STATIONS are now or soon will be open in the following cities:

New York, N. Y.	Baltimore, Md.	Columbus, O.	Salt Lake City, Utah.	Jacksonville, Fla.
Newark, N. J.	Richmond, Va.	Toledo, O.	St. Louis, Mo.	New Orleans, La.
Albany, N. Y.	Buffalo, N. Y.	Cincinnati, O.	Minneapolis, Minn.	Houston, Tex.
Brooklyn, N. Y.	Rochester, N. Y.	Dayton, O.	Los Angeles, Cal.	Dallas, Tex.
Boston, Mass.	Syracuse, N. Y.	Louisville, Ky.	San Francisco, Cal.	San Antonio, Tex.
Providence, R. I.	Detroit, Mich.	Chicago, Ill.	Kansas City, Mo.	Seattle, Wash.
Springfield, Mass.	Saginaw, Mich.	Des Moines, Ia.	Oklahoma City, Okla.	Portland, Ore.
Portland, Me.	Grand Rapids, Mich.	Indianapolis, Ind.	Omaha, Neb.	Toronto, Ont.
Philadelphia, Pa.	Pittsburg, Pa.	Milwaukee, Wis.	Atlanta, Ga.	Mexico City, Mex.
Washington, D. C.	Cleveland, O.	Denver, Colo.	Memphis, Tenn.	

THE DIAMOND RUBBER COMPANY, Akron, Ohio

☞ Look to mileage! That is where your tire cost is determined—greatest mileage is the reason you should make

Diamond TIRES

YOUR EQUIPMENT

**12th Year of Their Manufacture to This
Standard.**

**12th Year of Their Acknowledged Lead-
ership.**

12th Year of Progress and Development.

☞ DIAMOND tires are today the most scientifically manufactured tires in the world.

THE DIAMOND RUBBER COMPANY, Akron, Ohio



Roadster \$800—with Full Equipment as shown \$875

The Leader in Many Salesrooms

WE present for 1911—in addition to the car manufactured last year—two chassis with a variety of run-about and touring car bodies shown in our catalogue M.

The Paige-Detroit is a car that any man would be proud to own—a handy car for the man who owns big cars and a snappy "big little" car of high efficiency and individuality for any man to own.

Why This Is a Good Car For Everyone to Own

The Paige-Detroit is a car which is worth the money as an economy; while high-power cars costing five or six times as much are luxuries.

Owing to the small cost of maintenance and the ease of handling in the city it is an economical and handy car to go about in.

Besides it takes up very little room in the garage. It requires no chauffeur—anybody in the family can drive it.

It is easy to crank and to handle.

It's such a useful car that many corporations are buying them for their salesmen and officers as general utility vehicles.

The maintenance cost is low—tires last a long time—mechanism is simple—there are few repairs because all parts are light and strong—will travel 250 miles on one tank of gasoline.

It has all the ordinary advantages of the large car without their disadvantages—for instance—it will turn in a much smaller circle than a large car.

Most small cars rock and tip easily very much to the discomfort of the occupants.

With our spring suspension, however, the seat stays level and allows the car to ride easily over all bumps and ruts of the road.

Plenty of Reserve Power

While most small cars have a small engine we believe in the doctrine of reserve power.

Reserve strength is always a source of satisfaction whether in a bank, army or automobile.

For those who want accurate figures we will say that the A. L. A. M. rating for our motor is 22½ h. p., yet it develops 27 h. p. under test—from eight to ten horse-power more than other cars of this class possess.

A Word About Our Guarantee

We guarantee our car for one year. This is a definite guarantee, nothing misleading or contradictory. We will furnish a new part for any part found defective in material or workmanship if the old part is returned to our factory for inspection, freight prepaid. This refers to all parts of the car, but not accessories and tires, which are guaranteed by the makers. This guarantee is for one year from the date of the purchase of the car and is made to protect both dealer and buyer against imperfections which may be found even in the highest priced cars.

Repair Parts at Cost

We will furnish all repair parts at cost price—something which no other automobile manufacturer has ever offered to do.

We are satisfied with one profit and don't want two.

We do want satisfied owners.

Will Continue 2-Cycle Motor

We shall continue to make our 2-cycle motor. We firmly believe in its efficiency and future—but we have been forced by the larger demand for the 4-cycle type to make this our leader.

Either type of motor can be furnished.

Specifications

Wheel Base—Touring Car 104 inches. Roadster and Coupé 90 inches.

Axles—Front, I-beam drop forging. Rear axle semi-floating, nickel steel, roller bearings.

Frame—Pressed Steel.

Motor—4 cylinder, 4 cycle, cast en bloc. Bore, 3¼ inches. Stroke, 4 inches.

Valve Arrangement—On left hand side, 5-16 inch lift, 1 9-16 inch valve diameter, drop forge integral cams.

Ignition—Bosch magneto, fixed spark.

Lubrication—Splash. Constant level maintained by plunger pump operated from cam shaft.

Cooling—Thermo syphon.

Clutch—Multiple disc, operating in oil bath.

Change Gear—Sliding, selective.

Speeds—Touring Car, three forward—one reverse. Roadster, two forward—one reverse; ball-bearing transmission in Touring Car. All gears and shaft heat-treated nickel steel.

Brakes—Internal expanding and external contracting on pressed steel drums on rear wheels. Brake rod carried inside frame.

Road Clearance—9¾ inches under axles.

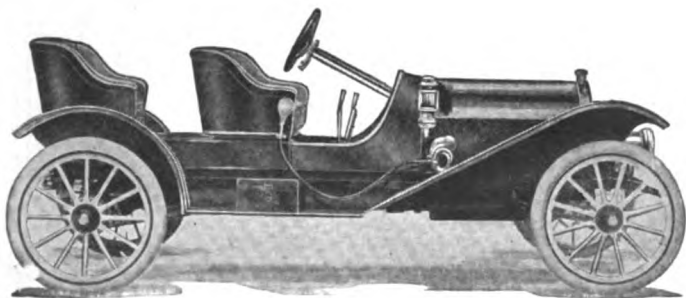
Prices—Roadster, \$800; with full equipment as shown, \$875. Touring Car (with detachable tonneau), \$900. Coupé, with full electric light equipment, \$1250—F. O. B. Detroit.

Catalog Coupon

PAIGE-DETROIT MOTOR CAR CO., DETROIT, MICH.
Gentlemen: Please send me your illustrated catalog.

Name.....

Address.....



Touring Car, \$900, with detachable rear seats.
Can be used for depot or marketing.

245-255 Twenty First Street.

Detroit, Michigan

Paige-Detroit Motor Car Co.

Earn a Dollar in a Few Seconds

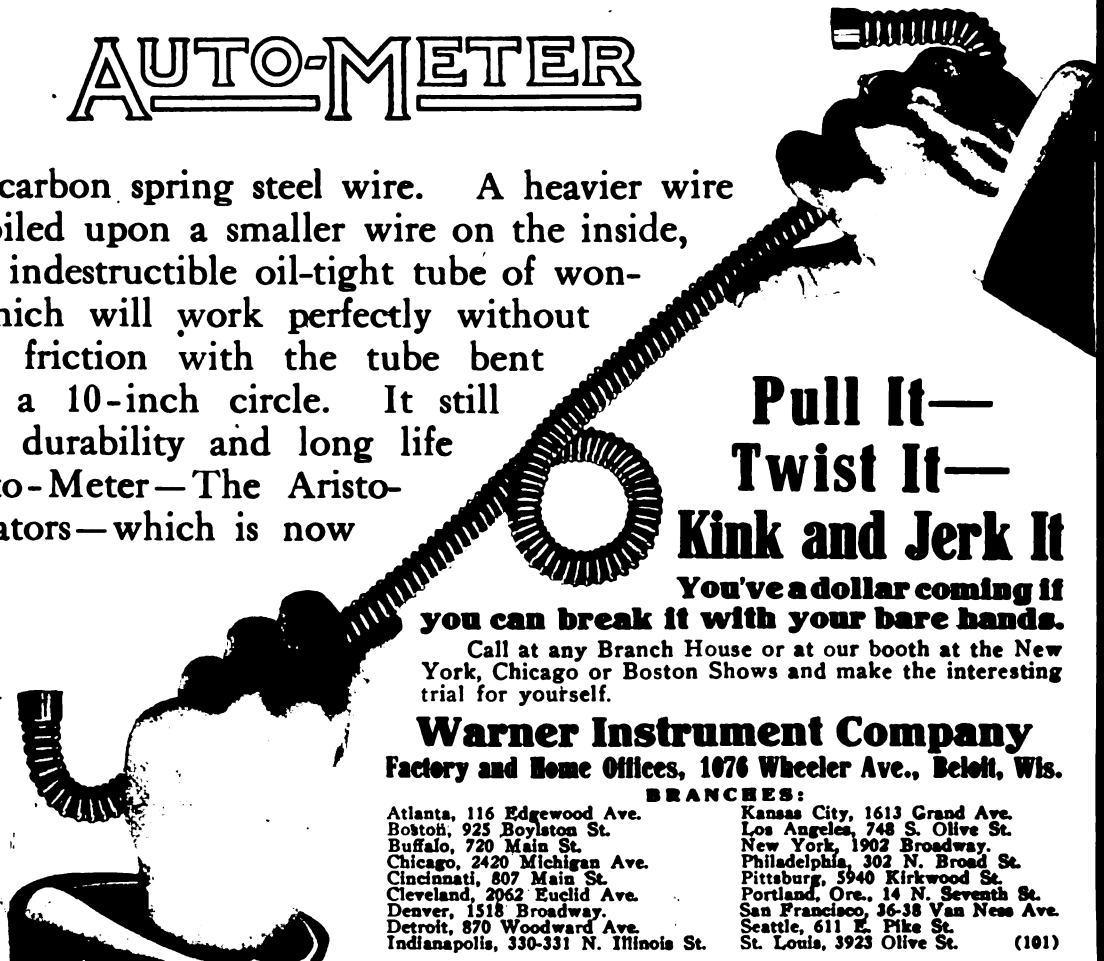
There is a big, round dollar waiting for any automobile owner who can break the new flexible driving shaft of the Warner Auto-Meter, using the hands alone. No one has ever yet done it without using a sledge or a heavy vise—and this has only dented it. This Samson-like shaft **wipes out shaft troubles entirely.** These have never amounted to much on the Warner—but they were the only troubles the Auto-Meter has ever had, bar accidents or abuse.

The New, Unbreakable Driving Shaft of the

WARNER

AUTO-METER

is made from high carbon spring steel wire. A heavier wire on the outside is coiled upon a smaller wire on the inside, making a practically indestructible oil-tight tube of wonderful flexibility, which will work perfectly without jamming or undue friction with the tube bent into a segment of a 10-inch circle. It still further adds to the durability and long life of the Warner Auto-Meter—The Aristocrat of Speed Indicators—which is now in use on at least 90% of all pleasure vehicles costing \$2,000 or more, and is the invariable choice of the auto. owner who can afford its purchase.



**Pull It—
Twist It—
Kink and Jerk It**

**You've a dollar coming if
you can break it with your bare hands.**

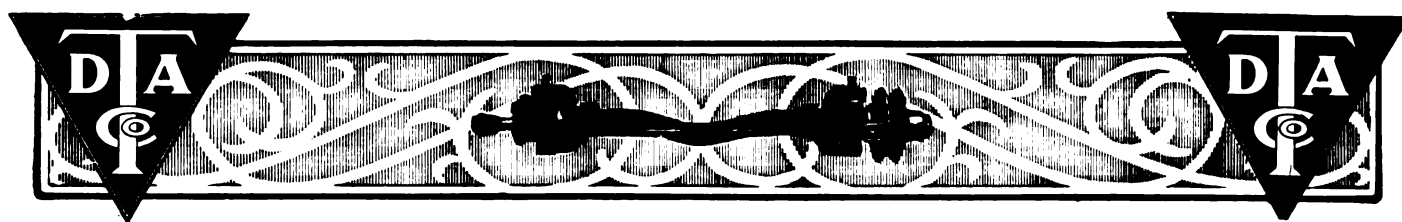
Call at any Branch House or at our booth at the New York, Chicago or Boston Shows and make the interesting trial for yourself.

Warner Instrument Company
Factory and Home Offices, 1076 Wheeler Ave., Beloit, Wis.

BRANCHES:

Atlanta, 116 Edgewood Ave.
Boston, 925 Boylston St.
Buffalo, 720 Main St.
Chicago, 2420 Michigan Ave.
Cincinnati, 807 Main St.
Cleveland, 2062 Euclid Ave.
Denver, 1518 Broadway.
Detroit, 870 Woodward Ave.
Indianapolis, 330-331 N. Illinois St.

Kansas City, 1613 Grand Ave.
Los Angeles, 748 S. Olive St.
New York, 1902 Broadway.
Philadelphia, 302 N. Broad St.
Pittsburg, 5940 Kirkwood St.
Portland, Ore., 14 N. Seventh St.
San Francisco, 36-38 Van Ness Ave.
Seattle, 611 E. Pike St.
St. Louis, 3923 Olive St. (101)



Eighty-Five Per Cent

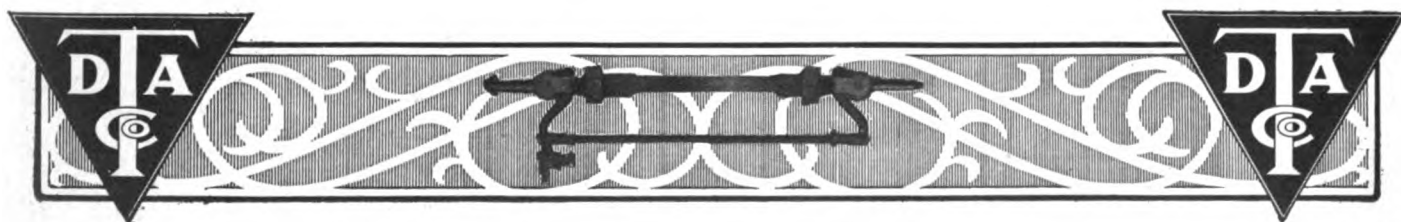
of the Successful Truck Makers
Use

TIMKEN-DETROIT

Axles Jackshafts
Hubs or Bearings

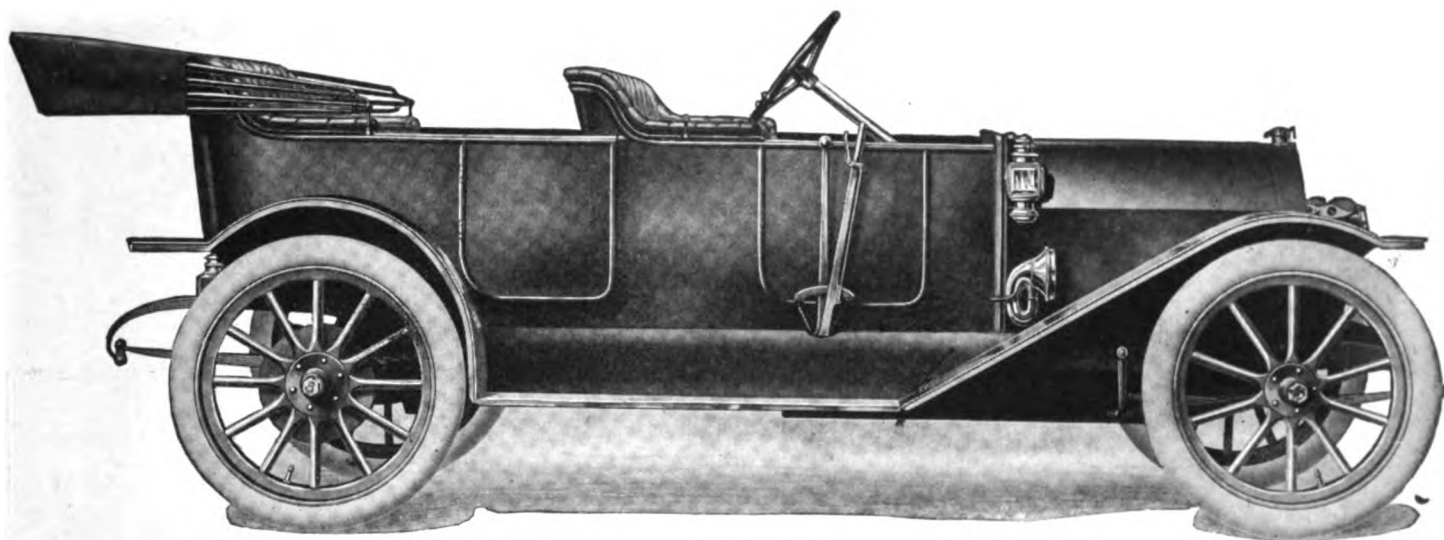
The Complete Line will be on
Exhibition at the Madison Square
Garden, January 7th to 14th.

The Timken-Detroit Axle Company
DETROIT



Sampson 35

\$1250



No other car offers all these features at this price

Some low priced cars contain *some* of the distinctive features of the Sampson 35.

Most high-priced cars contain *all* of them.

But the Sampson 35 is the first low priced, light car in which *all* of these high priced features have been combined.

The Sampson 35 has a fore-door body—of the style found on the Packard or Columbia.

It has a powerful, compact, silent motor—the same type as that used in the Stoddard-Dayton, except that it is designed to fit a smaller car.

It has a full-floating rear axle—eliminating the principal source of trouble in cars of this class.

It has a much lower centre of gravity than the average American car. This means less wind resistance and less wear on car and tires.

It has the popular long wheel base, 114 inches; unusually long, flat, easy-riding springs adopted from the French and now used on the leading American cars.

It has the roomy tonneau and wide, comfortable seats that the most skillful designers now furnish; the long, straight lines and the “carriage maker’s

finish” that give to the high-priced car its appearance of class.

Among cars selling at or near the Sampson price some have the high-powered motor, but not the stylish fore-door body.

Others have the fore-door body but not the full-floating rear axle or the selective transmission.

Some have a satisfactory power plant, but not the comfort-giving, three-quarter elliptic springs, the long wheel base or the graceful tailor-made lines.

We can offer you all these features in a \$1250 car because of the economies effected by the United States Motor Company—economies in buying, in manufacture, in management.

That is the reason we can afford to use as good a motor as we do. That is why we can furnish a beautiful fore-door body. That is why we can use an improved full-floating rear axle.

We save on selling expense as well as manufacture—for the Sampson 35 is handled by the 1800 established dealers of the United States Motor Company. This saving we are passing on to you in the form of added value.

The United States motor Company standard has been adopted for the Sampson 35—the standard of high quality utility cars at low prices. We are building only 1500 of the Sampson 35’s—but we shall build every one right.

Our catalog tells the detail of construction and equipment. It shows how we can offer you such a car as this at the price. Send a post card for it.

Standard equipment on all models includes quick detachable rims, gas lamps and oil lamps; top extra. Price, \$1250; with magneto, \$1300; with magneto and 34-inch wheels, \$1325. All prices, F. O. B. Detroit.

Deliveries Feb. 1, 1911.



ALDEN SAMPSON MANUFACTURING COMPANY

(Division of the United States Motor Company)

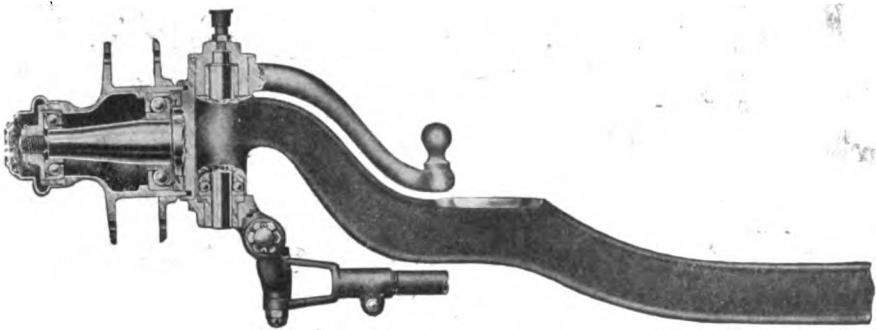
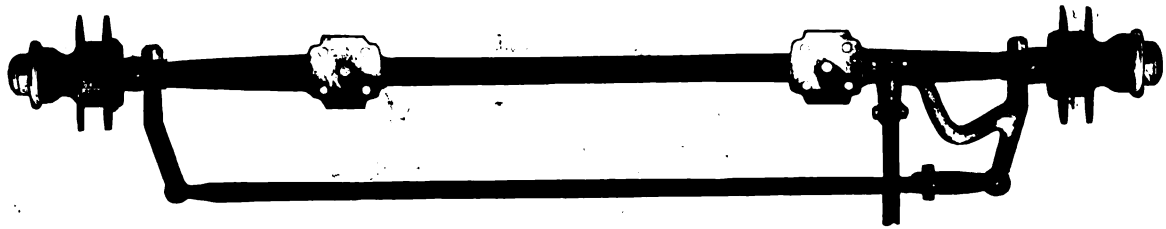
U. S. Motor Co.
1800 Dealers in
1200 Cities

Executive Offices: 1332 Rhode Island Ave., Detroit, Mich.

Licensed under the Selden Patent Since 1905

Factories
Detroit, Mich.
Pittsfield, Mass.

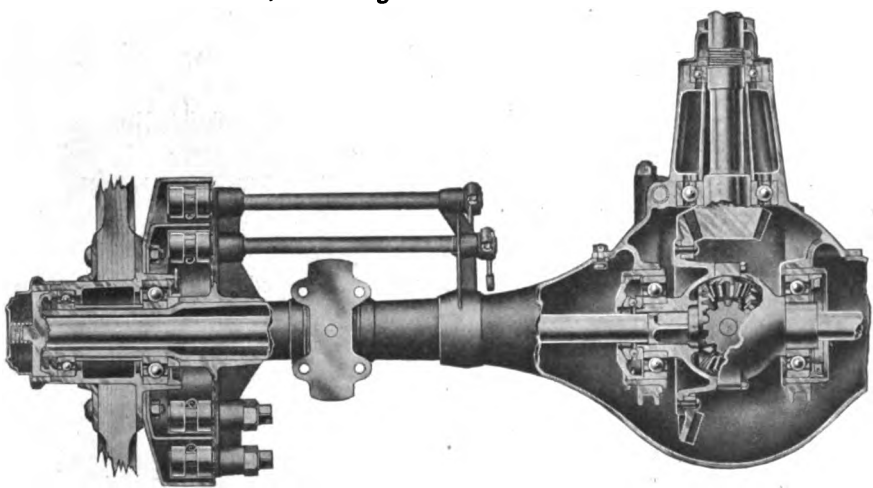
THE McCUE AXLES



Front Axles

LEMOINE AND ELLIOTT TYPES

Spring seats from 28" to 30"; drop from $\frac{7}{8}$ " to 4". Made of alloy and carbon steels, all weights.



Full Floating Rear Axle

- Housings — one piece sheet steel, heat treated.
- Floating axle with hub clutch forged integral. No welds or upsets.
- Pinion Gear — integral with pinion shaft, made of alloy steel and carefully treated.
- Bearings — imported annulars.
- Drums — 4, having flange bearing surfaces and braking surfaces carefully machined — making real brakes possible.

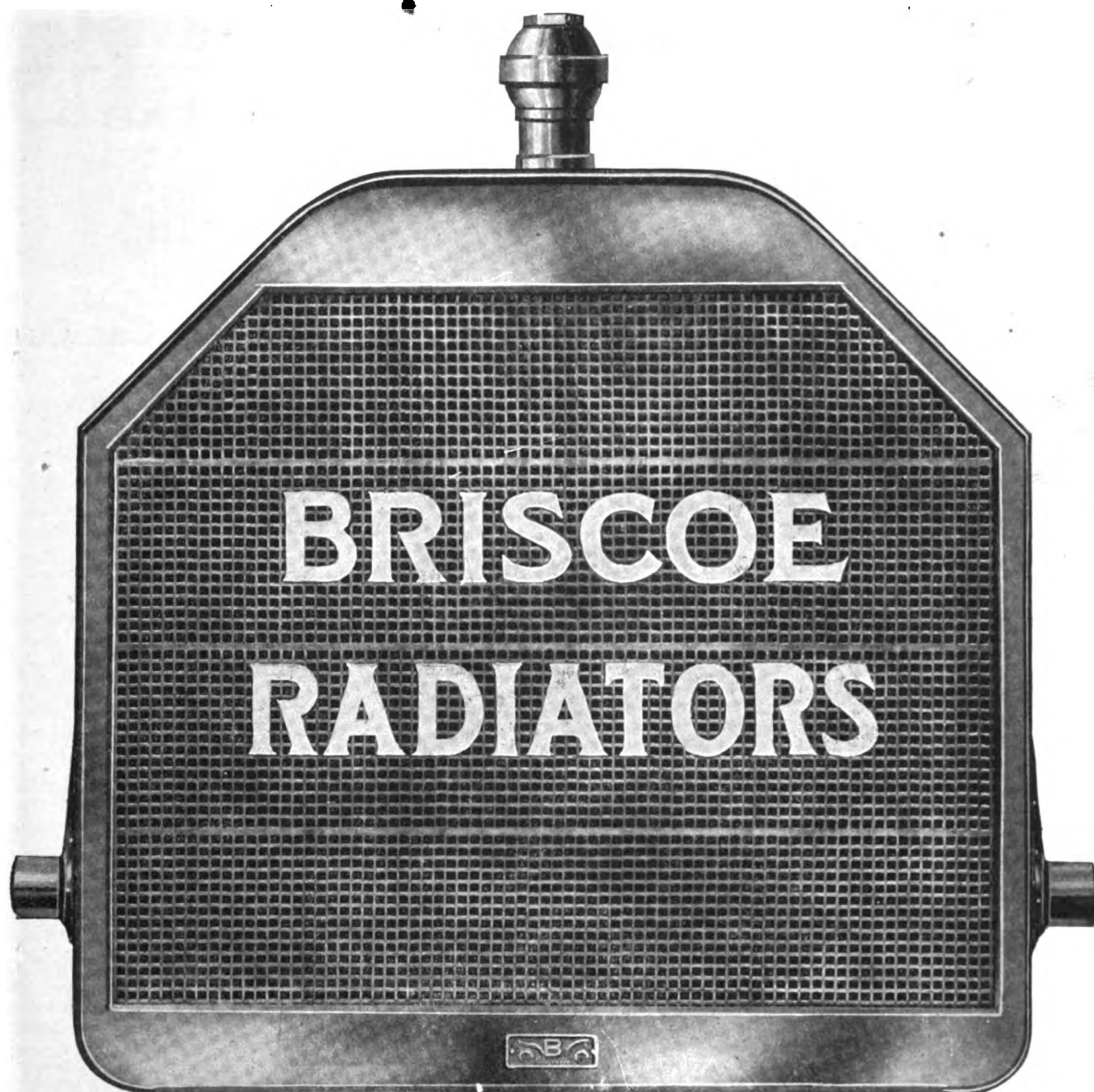
EVERYTHING entering the construction of these axles, including workmanship, is the best obtainable. They are made for service.

When you see a car with a McCue axle it is evidence of good construction all through.

THE McCUE COMPANY

Hartford, Connecticut

We will exhibit at New York, Madison Square Garden Show; Chicago, Coliseum Show; and Boston, Mechanic's Pavilion.



BRISCOE PRODUCTS

RADIATORS
HOODS
FENDERS

TANKS
DASHES
MUFFLERS

TUBE BENDING
SHEET METAL PARTS
STAMPINGS

DIES
GALVANIZING
ENAMELING

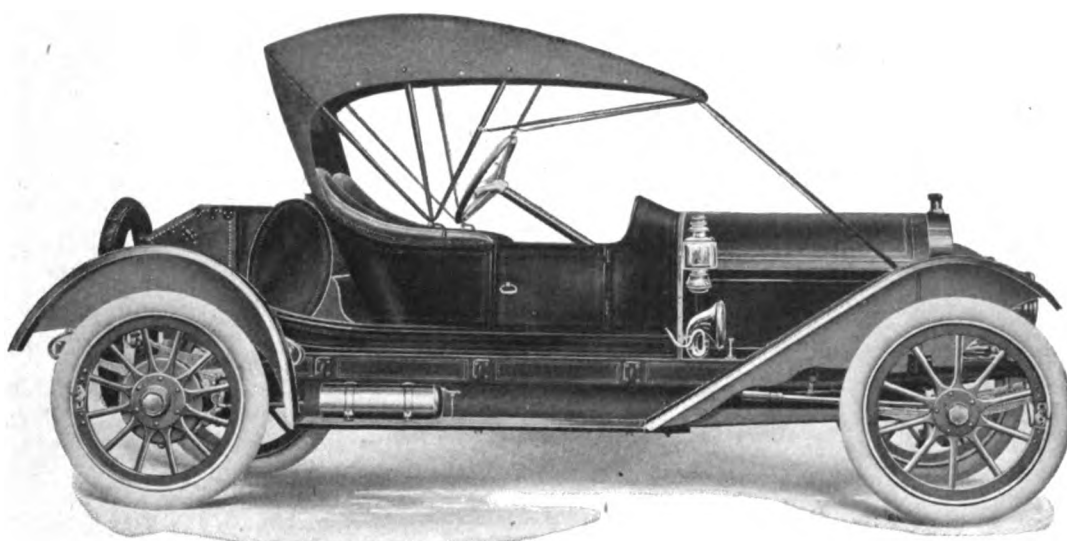
Let us make you a proposition on your next lot of SHEET METAL PARTS. We can interest you.

BRISCOE MANUFACTURING COMPANY, Detroit, Mich.

Pitted Against the World's Best Cars In "Blue Ribbon Events" the

McFARLAN SIX 1911

Has Proved by Its Performance Everything a Motor Car Could Be Expected to Do or Endure



6 Cylinder Model 34—4 x 5—50-60 H. P.—36 in. Wheels—128 in. Wheel Base—Demountable Rims. Price, fully equipped, including Mohair Top, \$2,500.

We also make a Runabout on similar lines. Six-Cylinders, 3.5-8 x 4 inches: Unit Power Plant: True 3-Point Suspension: Multiple Disc Clutch: 120-inch Wheel Base: 36-inch Wheels: Full Scroll Head Elliptic Springs in rear: Semi-Elliptic front: 24 Painting Operations in finish and trimmed throughout with best Hair and Leather: Mohair Top. Price, complete, \$2100.

NOTE, with emphasis, that McFarlan Stock Cars, entered in America's great Motordromes—Indianapolis, Atlanta—in races ranging from 10 to 200 miles—**have never changed a tire in a race**—think of it. Isn't that pretty conclusive evidence of six-cylinder superiority? **Seventeen Miles to the Gallon of Gasoline.**

In all these racing events, etc., the McFarlan has made an average of 17 miles to the gallon of gasoline, another fact that explodes the one feeble argument which the exponent of the four-cylinder car can harp on for lack of something more substantial.

No Mechanical or Tire Troubles

In the newspaper reports of these great speed and endurance events the McFarlan stands out conspicuously as the **one car to finish without mechanical or tire troubles.**

It has been no small undertaking to develop a thoroughly high-class, high-powered six-cylinder car that can meet the price competition of the popular four-cylinder cars, but that is precisely what we have done with the McFarlan Six.

When you select a four-cylinder car at \$1,500, or \$1,600, or

over, and add to it the necessary equipment, which is included in the McFarlan Six price, but **not** in the four-cylinder car price, your four has cost you practically the same amount.

And in style, in comfort, in motor efficiency, flexibility, absence of vibration; in power, hill-climbing ability and speed, there is absolutely no comparison—which fact a demonstration to anyone of open mind, will reveal in a few miles' ride.

Complete Equipment — Low Price

The McFarlan Six is the first big, luxuriously furnished six at a price within the reach of buyers of moderate priced cars.

And, mind you, we are **not** exploiting in this folder an undeveloped, untried car which is going to do things. We are talking of the McFarlan Six, which we have spent three years in developing—a car that has earned by **performance** its right to bear a name that for four generations has stood for high quality in the consideration of road vehicles.

We will mail, upon request, a sheet of comparative data on motor car construction which will prove intensely interesting to any man who is interested in the motor car subject.

THE McFARLAN MOTOR CAR CO., Desk D, Connersville, Ind.

See our Exhibit PALACE AUTO SHOW, NEW YORK, DECEMBER 31 TO JANUARY 7



PROMINENT MOTOR CAR BUILDERS

USING

Timken Roller Bearings

IN PART OR THROUGHOUT ON

THEIR 1911 MODELS

Pleasure Cars

Apperson Bros. Automobile Co.
Atlas Motor Car Co.
Autocar Co., The
Abbott Motor Car Co.

Bartholomew Co., The
B. C. K. Motor Co.
Babcock Co., H. H.

Cadillac Motor Car Co.
Chalmers Motor Co.
Columbia Motor Car Co.
Croxtton-Keeton Motor Co., The
Crawford Automobile Co.
Columbus Buggy Co., The
Coates-Goshen Automobile Co.
Canada Cycle & Motor Co., Ltd.
Carhart Auto. Corporation
Cunningham, Son & Co., James
Chautauqua Motor Co.
Case Motor Car Co.

Dayton Motor Car Co., The
Dorris Motor Car Co.
Durocar Mfg. Co., The
E-M-F Co., The

Franklin Mfg. Co., H. H.
Grout Automobile Co.
Great Western Automobile Co.
Haynes Automobile Co., The
Hupp Motor Car Co.
Haberer & Co.
Herreshoff Motor Co.
International Harvester Co.
Jenkins Motor Car Co., The
Kissel Motor Car Co., The
Knox Automobile Co.

Locomobile Co. of America, The
Lexington Motor Car Co., The

Marion Motor Car Co., The
Maxwell-Briscoe Motor Co.
Metzger Motor Car Co.
Mercer Automobile Co., The
McIntyre Co., W. H.
Maytag-Mason Motor Co.
Moyer, H. A.

Moline Automobile Co.
Midland Motor Co.
Moon Motor Car Co.
Matheson Motor Car Co.

National Motor Vehicle Co.
Nordyke & Marmon Co.
New York Taxicab Co.

Olds Motor Works
Owen Motor Car Co.

Packard Motor Car Co.
Peerless Motor Car Co., The
Pierce-Arrow Motor Car Co., The

Pope Mfg. Co.
Premier Motor Mfg. Co.
Palmer & Singer Mfg. Co.
Pullman Motor Car Co.

Reo Motor Car Co.
Royal Tourist Car Co., The
Stearns Co., The F. B.
Stevens-Duryea Co.
Speedwell Motor Car Co., The
Simplex Automobile Co.
Selden Motor Vehicle Co.
Smith Automobile Co.
Simplex Motor Car Co.
Stafford Motor Car Co.

Spoerers Sons Co., Carl
Sinclair-Scott Co.

Sears Motor Car Works
Schacht Motor Car Co.

Thomas Motor Co., E. R.
Terminal Taxicab Co. (of Wash-
ington, D. C.)

Velie Motor Vehicle Co.

Winton Motor Carriage Co.,
The
Westcott Motor Car Co.
Wilcox Motor Car Co., H. E.
Willys-Overland Co., The

Electrics (Pleasure)

Anderson Carriage Co., The
Babcock Electric Carriage Co.

Columbus Buggy Co., The
Kimball & Co., C. P.

Rauch & Lang Carriage Co.,
The

Waverly Co., The

Commercial Cars

American Locomotive Co.
American Motor Truck Co.
Atterbury Motor Car Co., The
Abendroth & Root Mfg. Co.
Auto Car Co., The
American La France Fire Eng.
Co.

Bartholomew Co., The
Commercial Truck Co. of Amer-
ica
Cass Motor Truck Co.

Franklin Mfg. Co., H. H.

Grabowsky Power Wagon Co.
Gramm Motor Car Co., The
General Vehicle Co.
Garford Motor Truck Works

Hart Kraft Motor Co.
Harrison Co., The Robert

Kelly Motor Truck Co., The
Knox Automobile Co.
Kopp & Co.
Kissel Motor Car Co.

Mack Bros. Motor Car Co.
Metzger Motor Car Co.
Morgan Co., R. L.

Oliver Motor Car Co.

Packard Motor Car Co.
Pierce-Arrow Motor Car Co.,
The

Pope Mfg. Co.
Packers Motor Truck Co.
Pennsylvania R. R. Co., The

Rapid Motor Vehicle Co.
Reliance Motor Truck Co.
Randolph Motor Car Co.
Reliable Auto Truck Co.
Robinson-Loomis Motor Car
Co.

Sampson Mfg. Co., Alden
Schurmeir Wagon Co.
Seagrave Co., The
Sternberg Mfg. Co.
Schacht Motor Car Co.

Victor Motor Truck Co.

Wilcox Motor Car Co., H. E.

Manufacturers Using Timken Bearings in Transmissions on 1911 Models

Apperson Bros. Automobile Co.
Atlas Motor Car Co.
Babcock Co., H. H.
Cunningham, Sons & Co., James
Case Motor Car Co.
Dayton Motor Car Co., The
Dorris Motor Car Co.
Gramm Motor Car Co.

Great Western Automobile Co.
Haynes Automobile Co., The
Imperial Automobile Co.
Knox Automobile Co.
Mercer Automobile Co., The
Moline Automobile Co.
Midland Motor Co.
Olds Motor Works

Rapid Motor Vehicle Co.
Reliance Motor Truck Co.
Schurmeir Wagon Co.
Selden Motor Vehicle Co.
Speedwell Motor Car Co., The
Schacht Motor Car Co.
Velie Motor Vehicle Co.
Westcott Motor Car Co.
Wilcox Motor Car Co., H. E.

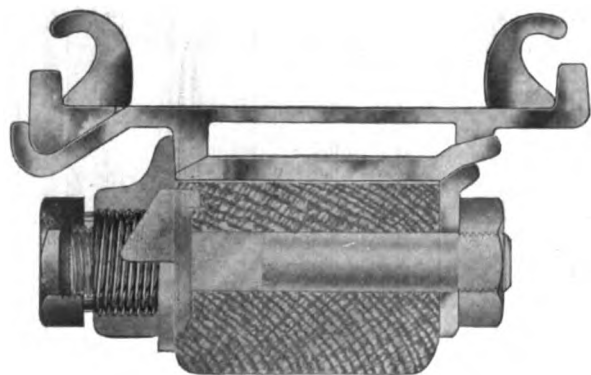
Transmission Builders

Auto. Parts Mfg. Co.
Brown-Lipe Gear Co.
Brownell Motor Co., F. A.
Model Gas Engine Works
Superior Machine Tool Co.
Warner Gear Co.
Warner Mfg. Co.
Wabash Gear Works.

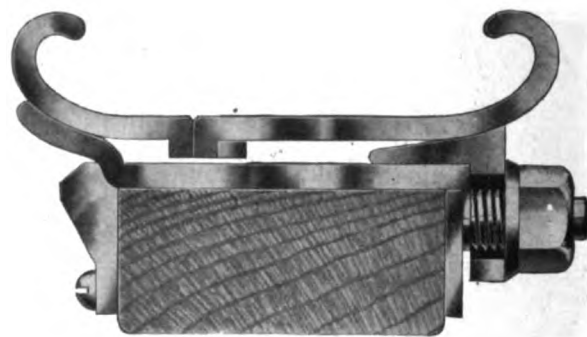
Axle Makers

Timken-Detroit Axle Co. use Timken Roller Bearings exclusively

TIMKEN ROLLER BEARING CO., Canton, Ohio



No. 2—For ALL Straight Side and Clincher Tires
(Clamp Locked)



No. 3—For ALL Clincher Tires
(Wedge in Position)

STANDARDIZATION OF RIMS

that benefits

CAR BUILDERS—TIRE MAKERS—CAR OWNERS

The Standard Universal Quick Detachable Demountable Rims

"FIT ALL TIRES"

and

Solve the Problem of Interchangeability

25,000 sets of Demountable Rims and 135,000 sets of Quick Detachable Rims, practically 90 per cent. of the total number of Rims made in the United States, have been contracted for by the following manufacturers:

Acme Motor Car Co., The
American Locomotive Co.
American Motor Car Co.
Anderson Carriage Co.
Argo Electric Vehicle Co.
Ashland Auto Co.
Atlas Motor Car Co.
Atwood Auto Co.
Auburn Auto Co.
Austin Auto Co.
Auto Car Co.
Badger Motor Car Co.
Baker Motor Vehicle Co.
Bartholomew Co., The
Bergdoll, L. J., Motor Co.
Borbein Auto Co.
Broc Electric Carriage Co.
Buick Motor Co.
Burg, The L., Carriage Co.
Cadillac Motor Car Co.

Canada Cycle & Motor Co.
Carhartt Auto Corp.
Chalmers Motor Co.
Columbia Motor Car Co.
Cook Auto & Carriage Co.
Corbin Motor Vehicle Corp.
Cunningham, Jas., Son & Co.
Davis, Geo. W., Carriage Co.
Dayton Motor Car Co.
Dietrich Motor Car Co.
E-M-F Co.
Ellis Motor Car Co.
Elmore Mfg. Co.
Fiat Auto Co.
Franklin, H. H., Mfg. Co.
G & J Tire Co.
Gabriel Auto Co.
Garford Co., The
Gramm Motor Car Co.
Great Southern Auto Co.

Grout Auto Co.
Hartford Rubber Works Co.
Hayes Wheel Co.
Hol Tan Co.
Hudson Motor Car Co.
Imperial Wheel Co.
International Harvester Co.
Inter-State Auto Co.
Jeffery, Thos. B., Co.
Johnson Service Co.
Kissel Motor Car Co.
Lexington Motor Car Co.
Locomobile Co.
Lozier Motor Car Co.
Louverne Auto Co.
McFarlan Motor Car Co.
McLaughlin Motor Car Co.
Mann-Aldrich Carriage Co.
Marion Motor Co.
Maxwell-Briscoe Motor Co.

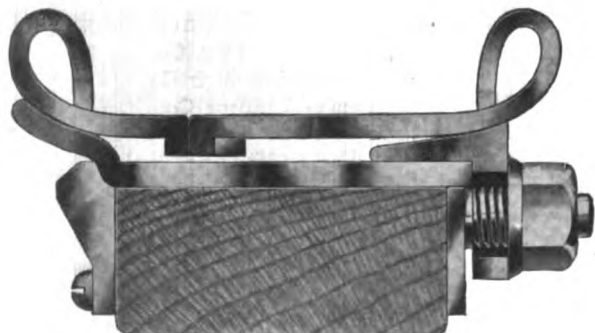
Michigan Buggy Co.
Middleby Auto Co.
Mitchell-Lewis Motor Co.
Moline Auto Co.
Moon Motor Car Co.
Moyer, H. A.
Morgan & Wright
National Motor Vehicle Co.
Nordyke & Marmon Co.
Oakland Motor Car Co.
Olds Motor Works
Overholt Co.
Packard Motor Car Co.
Paterson, W. A., & Co.
Peerless Motor Car Co.
Pierce-Arrow Motor Car Co.
Pence Auto Co.
Pope Mfg. Co.
Premier Motor Mfg. Co.
Prudden & Co.

Pullman Motor Car Co.
Rauch & Lang Carriage Co.
Richmond Iron Works Corp.
Schacht Motor Co.
Selden Motor Vehicle Co.
Simplex Auto Co.
Stanley Motor Carriage Co.
Stearns, F. B., Co.
Stevens-Duryea Co.
Streator Motor Car Co.
Studebaker Auto Co.
Thomas, The E. R., Motor Co.
Traveller Auto Co.
Vellie Motor Vehicle Co.
Waverley Co., The
Westcott Motor Car Co.
White Co., The
Willis-Overland Co.
Winton Motor Carriage Co.

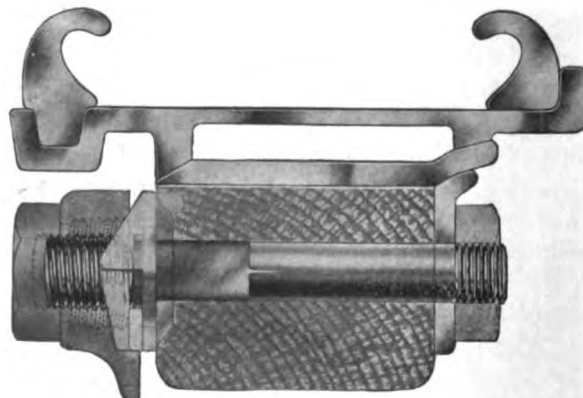
Write for illustrated
descriptive matter.

**The
United Rim
Company**
AKRON, OHIO

**8 DEMONSTRATIONS
BOTH SHOWS**



No. 3—For ALL Straight Side Tires
(Wedge in Position)

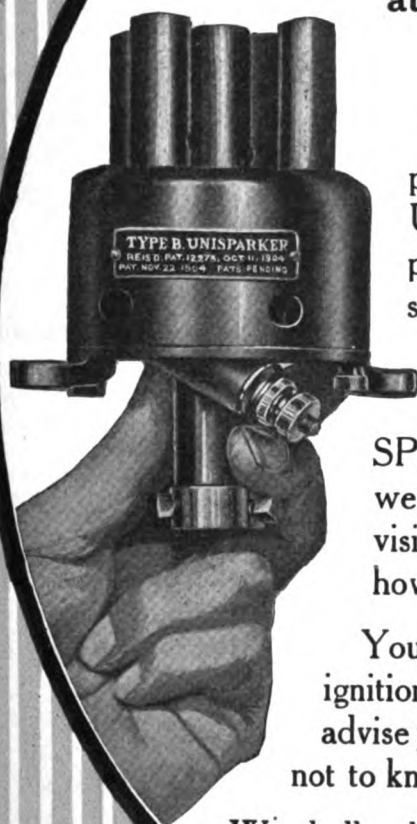


No. 1—For ALL Straight Side and Clincher Tires
(Clamp Unlocked)

UNISPARKER

Dealers and Repair Men

are invited to examine the UNISPARKER
at our Space, No. 281, Madison
Square Garden Show.



We have said much about the simplicity and unfailing regularity of the UNISPARKER'S action. Its remarkable performance is due largely to its positive single spark contact, which eliminates the magnetic trembler.

Though easy to understand, the UNISPARKER is less easy to describe. Therefore we invite shop and garage men especially to visit us at the Shows and see for themselves just how it works and why it does what we claim.

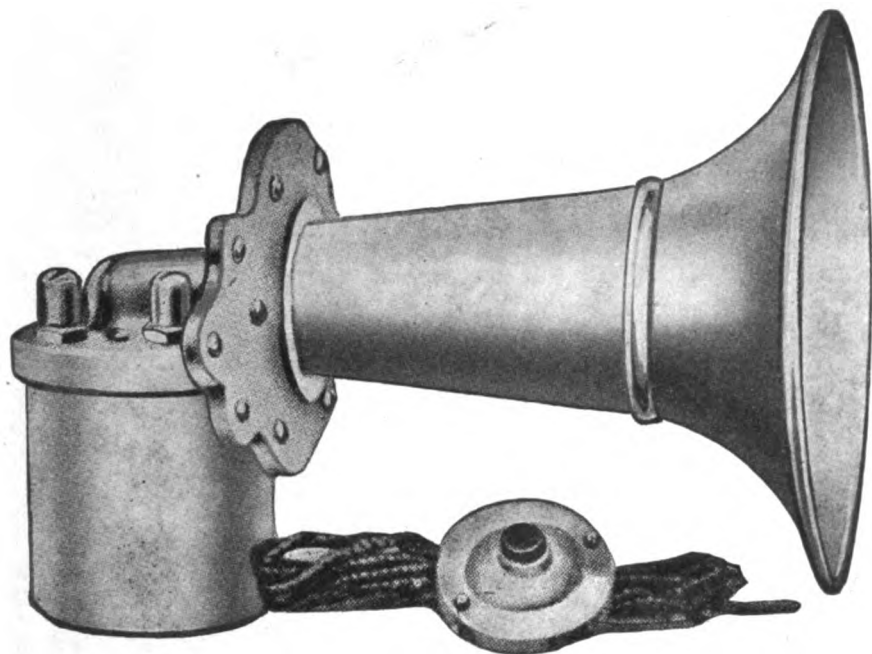
You are frequently asked for advice regarding ignition equipment. It is to your interest to advise your customers well. You cannot afford not to know the UNISPARKER. COME!

We shall exhibit at the Chicago and Boston Shows, as well as at New York. See us there, if you do not come to New York.

ATWATER KENT MFG. WORKS
PHILADELPHIA., PA.

ANNOUNCEMENT

The Arnold Alarm



THE PERFECT ELECTRIC SIGNAL

For Automobiles
For Motor Boats

HAS the right tone quality and volume of sound to instantly attract attention. Can be heard for great distances on country roads and above the roar of city traffic. The ARNOLD ALARM is so adjusted that it requires less than one ampere of current; six dry cells will operate it most satisfactorily without renewal for a great length of time.

DEALERS

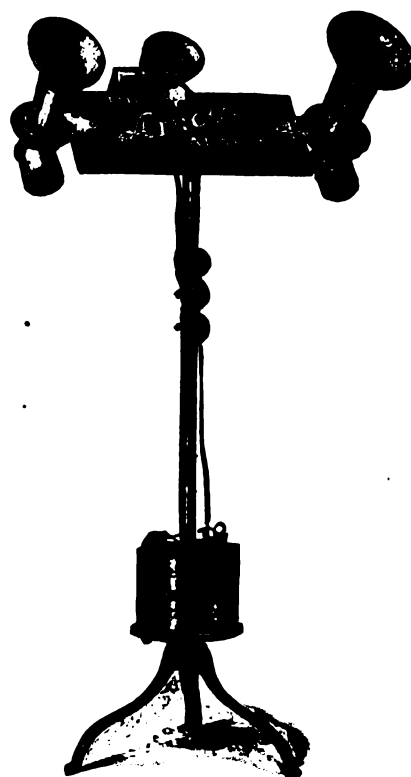
With your first order for one of each size ARNOLD ALARM we will furnish **FREE** one of the handsome display stands as shown, made of highly polished brass rod, with a handsome dash of metal and wood on which you may mount the ARNOLD ALARMS and attach batteries. Place this stand in a convenient part of your salesrooms and it will demonstrate and sell ARNOLD ALARMS for you. The ARNOLD ALARM is right in tone, quality and quantity, right in price, and is sold under our liberal guarantee.

MANUFACTURED BY

The Standard Electric Works

1300 Twelfth Street

RACINE, WIS.



Why Vibrating Coils Decrease Engine Power

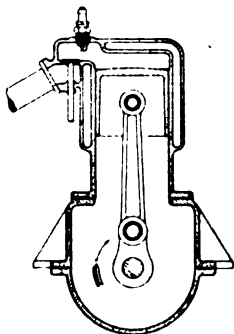


FIG. 1.

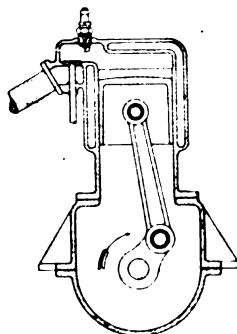


FIG. 2

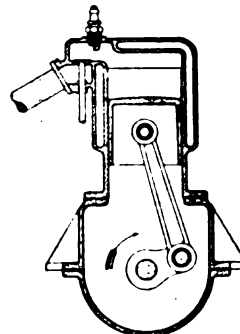


FIG. 3

Everyone who has operated a gasoline motor equipped with the ordinary vibrating coil knows that when the batteries begin to weaken the motor does not develop full power. The sketches shown above are to show why this occurs, and a remedy is suggested below. We have used the Cadillac type of motor for this sketch.

There can be but one best time for the spark to ignite the charge in the cylinder, and that time is shown in Fig. 1. If the charge is fired at this point in each cylinder, your motor is working to its best advantage.

But it is harder for the spark to jump the gap between the points of the spark plug when the compression is so high. Therefore, when your batteries weaken, or the vibrators are not adjusted exactly right, the first spark from the coil may not ignite the charge. By the time the second spark occurs, the piston is at position shown in Fig. 2.

Often the charge is not fired until the third spark, when the piston is at position shown in Fig. 3. Firing either at 2 or 3 decreases your engine's power.

Besides this objection, vibrating coils require constant attention, are wasteful of current, cause timer troubles, and are generally unsatisfactory and unreliable.

Good magneto ignition is better because it furnishes a properly timed single spark. It is not entirely satisfactory because its adjustment cannot be made by the ordinary driver, and because to be at all satisfactory you must carry batteries for starting. Enough batteries are used in this way to run the car all the time on



"Delco"

The Ignition That's Nearly Ideal

Delco Ignition is designed to embody the good points and eliminate the weaknesses of ordinary battery and magneto systems.

It will run your car for months on a single set of dry batteries. Or you can use storage if you prefer. A Columbia multiple battery will run a Delco equipped car a year.

It requires one simple adjustment two or three times during the life of the car. Anyone can make this adjustment. No ignition now on the market, battery or magneto, requires so little attention as Delco.

Delco delivers but a single spark, timed exactly right, for every explosion in the cylinders. Your batteries can be allowed to run down to almost nothing, yet the power of your motor is still the same.

We now make over sixty styles and sizes of Delco apparatus. One of them will no doubt meet YOUR requirements exactly. Anyway, it will pay you to get in touch with our Engineering Department right away.

THE DAYTON ENGINEERING LABORATORIES COMPANY

Delco Ignition Department
DAYTON, OHIO, U. S. A.

RAIN SNOW MUD

YOU MUST USE **WEED CHAINS**

WHEN the roads are covered with mud or snow—when the pavement is slippery and greasy—you've simply got to have WEED CHAINS. If you drive without them you're running a big risk. They positively prevent skidding. They make motoring safe. They prevent accidents due to skidding. They are found on practically every tire when the weather is bad.

Better be safe, sure and certain.

Don't skid. Buy WEEDS to-day!

WE EXHIBIT AT THE GARDEN SHOW



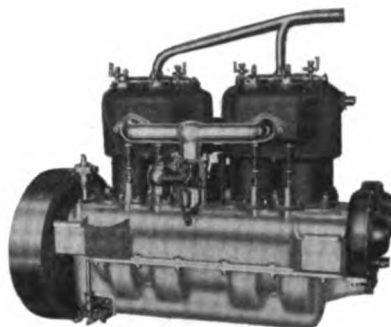
**WEED CHAIN DEP'T
UNITED MANUFACTURERS**

250 West 54th Street

New York

**CROSS CHAINS
BRASS PLATED**

These new motors will make their first appearance at the Chicago Automobile Show, Space 65.

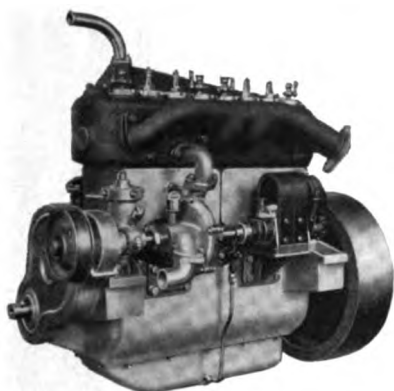


Model "T"

Cylinders 5 x 5 1/4 inches. Cast in pairs. "T" head type with main frame construction. Special automatic oiling system, liberal bearings, large valves and other notable features.

Cylinder of 5 1/4 inch bore will also be supplied on this model of motor.

The up-to-date features and attractive prices are sure to interest the most critical manufacturers.



Model "O"

Cylinders 4 1/2 x 5 1/4 inches, cast en bloc. "L" head type, furnished in main and subframe construction. Also supplied in complete unit power plant, using multiple disc clutch and selective type transmission. This motor will also be supplied in 3 3/4 x 5 1/4 inch size.



Model "E"

Cylinders 4 1/2 x 5 1/4 inches, cast in pairs. "L" head type, supplied in both main and subframe construction. This motor can be had in complete unit power plant, using multiple disc clutch and three speed selective type transmission.

1012
Standard

The superiority of the CONTINENTAL product has been generally recognized for many years past and the progressive pleasure and commercial vehicle manufacturers cannot afford to overlook the many approved of features found in these new models. Blue prints and full particulars will be sent upon request.

Continental Motor Manufacturing Co.

MUSKEGON, MICHIGAN

**Contract Now
for Your 1912
Requirements.**

**Factory Representative
K. F. PETERSON
150 Michigan Ave.
CHICAGO, ILLINOIS**



Sample motors will be shown at the Chicago Automobile Show only, Space 65, Coliseum Gallery.

**Factory Representative
L. D. BOLTON
1810 Ford Building
DETROIT, MICHIGAN**

The Largest Automobile



THE CELEBRATED Brampton Chain

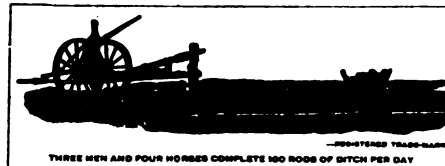
is the Strongest Chain in the World

Price the Same as Other Chains

THE Brampton Chain

is not only used on Motor Cars, Motorcycles, Bicycles and Aeroplanes, but also on Machinery of all kinds.

**All Standard Sizes
in Stock.**



ALL SURVEYING FIRM WHERE WE DO THE TILING. A & P.C. INVESTMENT IN TILE PAYS 100 P.C. BY APRIL 1907

H. M. FISK,

Successor to H. M. Fisk, & Co., Inc.

**Solicitor and Contractor
For Tile Draining.**

Maint'rs. of The Only Successful Rapid Tile Laying Machine on

PELLA, IOWA Dec. 10/10/ 191

Chas. E. Miller, 121 Chambers Street N.Y.

Dear Sir,

I have your letter of 20th inst., stating you had shipped 3 1/2 pitch, Brampton Roller Chain. You ask what we use said chain for. I send you two Photos of Machine upon which we use said chain. Drum 22 inches diameter, Sprocket 39 inch diameter, draft 57 tons, at highest tension, the chain has run three summers without perceptible wear, and we think it a dandy.

Yours very truly,

H.M.Fisk.

We are the Sole American Agents. Catalog on request.

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Exporter and Importer

Philadelphia, Pa.

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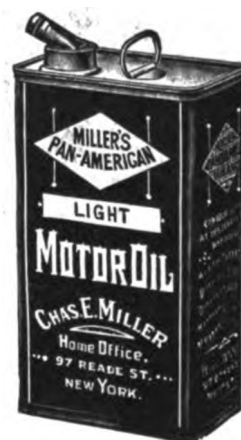
Saves Power

Saves Wear



Saves Time

Saves Money



Miller's Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Miller Pan-American Gear Case Compound

Made in Three Densities — Light, Medium, Heavy

All have a low cold test and high melting points and retain their various consistencies at varying temperatures.

In order to convince you of the efficiency of these lubricants we are willing to make you a SPECIAL PRICE for an initial order, much lower than usually quoted on other high-grade oils and greases.

AGENTS WANTED IN UNOCCUPIED TERRITORY.

HOME OFFICE

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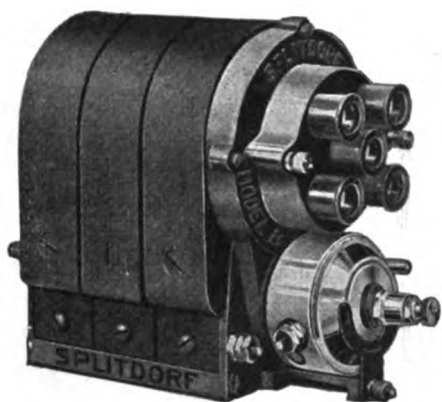
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The Life and Economy
of your car depends
on the Ignition.

Experience and use have shown conclusively that the

furnishes Ideal Ignition for the motor car.

One great advantage given by the SPLITDORF is its ability to throttle down to a snail's pace for an indefinite period of time—often an absolute necessity.

And again, the positive certainty of starting on a quarter turn under all conditions.

It always gives a properly timed spark that gets the maximum of power out of the engine.

Equip your car with a SPLITDORF Magneto whose reputation for Efficiency and Reliability has been won in actual service.

Ask for Magneto catalog

Don't fail to see our exhibit at the Madison Square Show—129 Elevated Platform

C. F. SPLITDORF Walton Avenue New York
 and 119 6 Street

BRANCH, 1679 BROADWAY

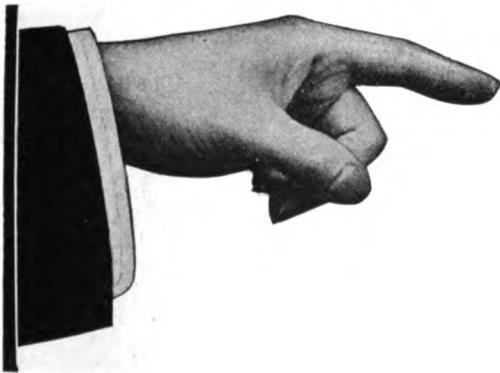
Chicago: 319 Michigan Ave.
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San Francisco: 520 Van Ness Ave.

Detroit: 858 Woodward Ave.
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JONES SPEEDOMETER

READ THIS GUARANTEE



Form No. 1000-11-16-10-10a.

GUARANTEE

THE demonstrated durability of the 1910 JONES SPEEDOMETER, and the perfect mechanical construction of the 1911 Model justify us in making the strongest guarantee ever given on Speed Indicators.

This SPEED-O-METER AND FITTINGS is guaranteed against INACCURACY or BREAKAGE due to imperfect material or construction, and will be repaired free of charge if returned prepaid at any time to our factory at New Rochelle, N. Y.

THE JONES SPEEDOMETER.

This Guarantee MEANS Something!

It has been positively demonstrated by actual tests of the U. S. Government Bureau of Standards at Washington and the leading Universities, that the JONES is the most accurate speed-indicator on the market.

The Jones is constructed on the principle of centrifugal force—not magnetic. This means that it's ABSOLUTELY IMPERVIOUS to heat, cold or temperature changes. Therefore the HIGH QUALITY—the UNERRING ACCURACY of the JONES justifies us in making the strongest guarantee ever given. It's printed above—read it—it stands back of every speedometer, bearing the names JONES.

Can you ask for more convincing proof of the superiority of the JONES?

See our exhibit at Garden Show.
We've some new things to show you.



**JONES SPEEDOMETER DEP'T
UNITED MANUFACTURERS**

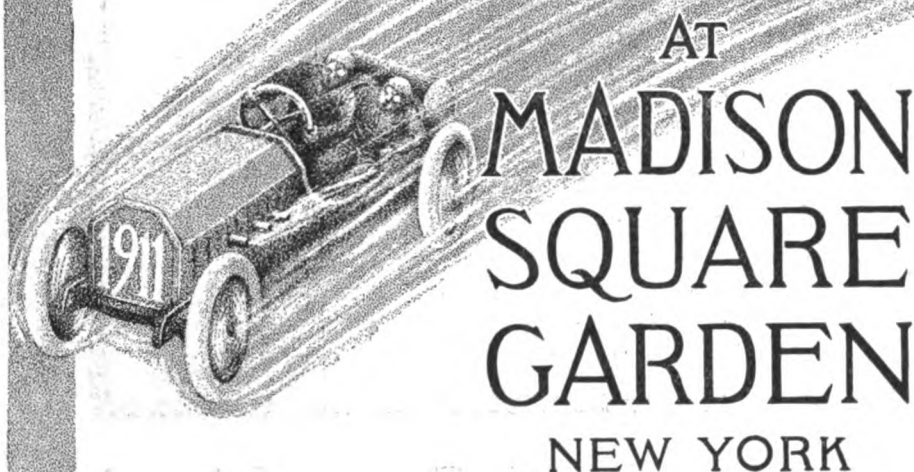
250 West 54th Street

New York



ELEVENTH NATIONAL AUTOMOBILE SHOW

Open
for two weeks



AT
MADISON
SQUARE
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January 7 to 21

Commercial Vehicles, Electric Pleasure
Vehicles, Motorcycles and Accessories

Under the Auspices of
*Association of Licensed
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At PART II—January 16 to 21

The Largest Automobile Exhibition Ever Held in America

The following makes of cars will be exhibited :

Alco	Buick	Grabowsky	McIntyre	Peerless	Reliance
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All Gasoline Cars Exhibited are Licensed Under the Selden Patent.

The following motorcycles will be shown:

Detroit	Harley-Davidson	Marvel	N. S. U.	Reading-Standard	Thor
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Management: SHOW COMMITTEE, A. L. A. M., 7 East 42nd Street, New York.

A GAME no longer, but one of the great industries of our country. Automobile manufacturers recognizing that henceforth they must sell on and by merit alone, are not only strengthening their organizations, but are seeking to incorporate in their cars every feature that enhances their value with the buying public.

Buyers are wiser today than in the past and insist that every component part must be of the best.

They know the makers of the best parts and cars containing such materials are given preference.

That is one reason why so many manufacturers find it profitable to pay a little more for

McCORD PRODUCTS
THEY HELP SELL CARS

McCord
Manufacturing Company
DETROIT

*See Our Exhibit at the
New York and Chicago Shows.*

Radiators
Fans
Lubricators
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Etc.

Up-To-Date

Dealers everywhere are agreed that the Stewart Speedometer is the only one that "keeps pace with the times." "Always up-to-date." They find in the Stewart every refinement, every improvement. As one big dealer writes:

Your temperature compensating device makes your speedometer perfect, and as usual, places you several years ahead of your competitors.

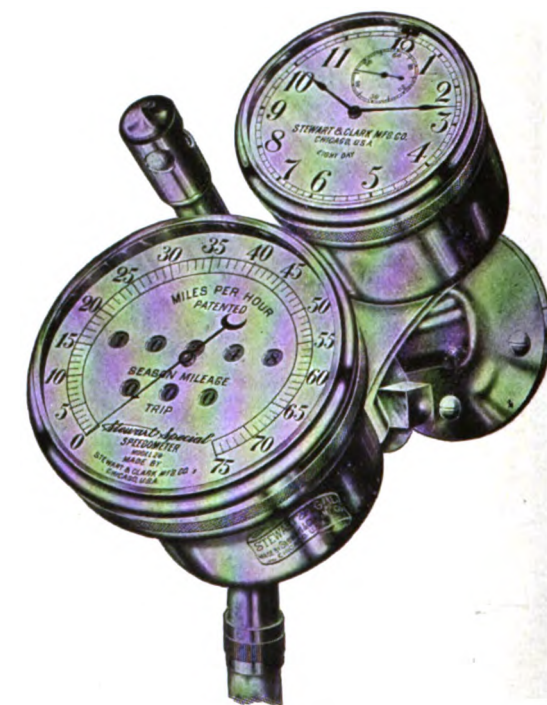
The better, cleaner cut, up-to-the-minute 1911 Models of Stewart Speedometers, render other makes difficult to sell at any price.

Sell the Popular Stewart

Stewart & Clark Manufacturing Company

1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
New York: 1878 Broadway
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Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years

MICHELIN



*Prevent skidding, insuring car
and passengers against accident
and possible serious injury.*

*Tough, Flexible, Non-Puncturing
Leather Tread*

*Firmly Imbedded Hardened Steel
Anti-Skid Rivets*

*Michelin Anti-Skids are easy riding
as the resilient rubber side walls are
NOT confined by the leather tread.*

MICHELIN TIRE CO. MILLTOWN, N. J.



WE have completed our annual arrangements for increase of business. Our equipment in all departments is very complete. We will exhibit our

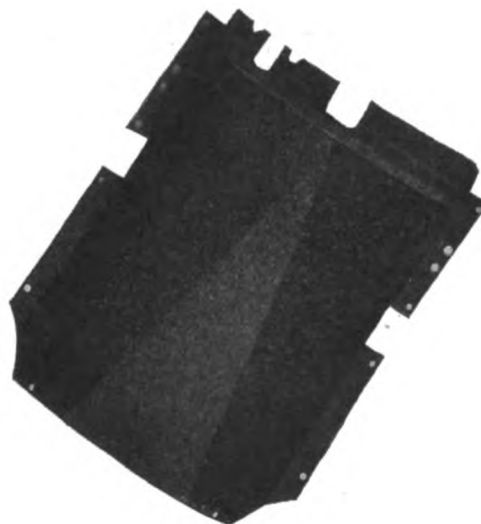
**New Channeled Steel Fender Stiffener
and the Hayes-Stanwood Running Board**

Metal Bodies

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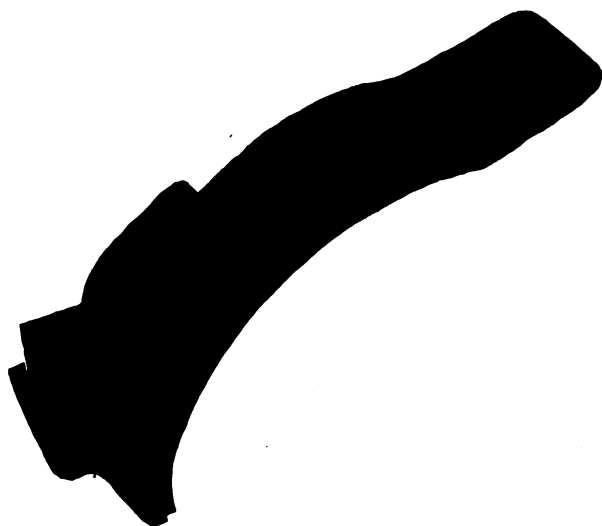


Engine Pans

**Running Board
Shields**

**Forged Irons
Tool Boxes**

and a **FULL LINE OF SHEET METAL PARTS** at the New York and Chicago Shows. Don't miss seeing them.

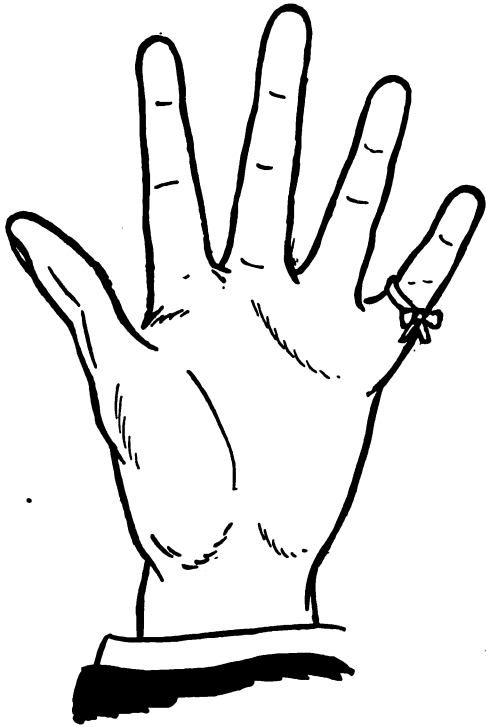


**HAYES
M'F'G
CO.
Detroit,
Mich.**



DON'T FORGET

to call at space 154 Madison Square
Garden Show and see the

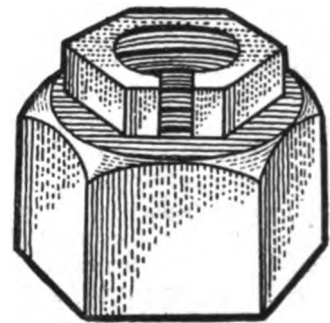


Improved Columbia Lock Nut

one of the most useful articles exhibited and a real contribution to safety in motoring.

The Improved Columbia Lock Nut actually LOCKS. Vibration that causes the ordinary nut to work loose and resulted in so many accidents, has absolutely no effect on the Improved Columbia Lock Nut. The great railroads of the country are its largest users.

It should be used on every car built, especially on important or vital parts. It is used by many of the best-known cars. See it for yourself or write us for booklet telling all about Improved Columbia Lock Nuts.



COLUMBIA NUT & BOLT COMPANY

Bridgeport, Conn.

Automobile Dealers, Attention!

E-M-F "30"

There is no automobile value on the market which can compare with that embodied in the E-M-F "30" and the Flanders "20." They are cars that sell—cars that stay sold and transform every owner into an automobile salesman, working without salary, in the interests of E-M-F Company dealers. They are cars, Mr. Dealer, that will make money for you.

You know that the day of the high-priced, high-powered, heavy-weight road-locomotive is past. You know, too, that the public is becoming increasingly wise regarding the merits of the different varieties of automobiles, and will no longer purchase cars of questionable reputation or unproven durability. You want to handle a popular-priced line of real quality. You want the E-M-F "30" and the Flanders "20."

You want to simplify your business relations as much as possible, and limit them to but one manufacturer, if you can. You want that manufacturer to be one whose permanency is assured and whose reputation for fair treatment of dealers and clients is established. The E-M-F Company—a seven-million-dollar corporation—stands ready to do business with you. Its line is complete and sufficient for your needs.

You want to maintain close relations with the firm that makes the cars you sell. You owe it to yourself to investigate the E-M-F Company's system of factory branches. One of these branches is almost at your very door—wherever you may live. It is at your call, with a full stock of cars, supplies and replacement parts.

You know the merits of the two standard E-M-F Company chassis types. You have seen E-M-F Company cars pull through mud and up hills where all others had failed. You know that every part of these cars is built in the E-M-F Company's shops. You know that success in the hands of 20,000 owners would be impossible if the cars were not absolutely correct in every principle. You know the selling value of the E-M-F Company's one-year guarantee on car and equipment.

The E-M-F Company is displaying, this week at the National show in Madison Square Garden, a complete line of its standard E-M-F "30" and Flanders "20" motor cars.

THE E-M-F "30" TOURING CAR, with ample capacity for five adult passengers, is recognized as the most popular American automobile. Its speed and power are ample for any task which can be performed by any motor car. Comfortable, handsome, luxurious and enduring, yet so light that economy of tires and supplies is one of its characteristic features, the popularity of this model is so widespread and established that detail is unnecessary here. Its price is \$1000.

THE E-M-F "30" DEMI-TONNEAU is a snappy car of the semi-speed type, seats four passengers and differs from the touring car in its compact passenger arrangement and the apportion-

FLANDERS "20"

ment of the major share of the floor space to the front, instead of the back seat. It is equipped with scuttle dash and sides of the semi-torpedo type. The whole body is built on close-to-the-ground lines, the seats are lower than those of the Touring Car, and the steering column is raked at a sharper angle. Its price is also \$1000.

THE E-M-F "30" ROADSTER is the speed car of its family. While its design embodies no extremes and implies no sacrifice of comfort, it exemplifies in its details many of the successful points of the E-M-F "30" racing cars which have won so many triumphs in competition. The E-M-F "30" Roadster seats two, is equipped with scuttle dash, semi-torpedo sides, low-raked steering column and large gasoline tank, exposed in the rear, with sufficient fuel for 400 miles of travel. Its light construction and the perfect balance afforded by the E-M-F type of transmission, fit the E-M-F "30" Roadster for long journeys at high speeds. Like the other two models it sells for \$1000.

THE E-M-F "30" COUPE lists at \$1450 and is one of the most handsome vehicles of its type. It is upholstered in leather and English broadcloth, has interior and exterior electric lights, adjustable plate-glass windows, nicked hardware and a large locker under the rear deck.

THE FLANDERS "20" FOR 1911 is a car of which the E-M-F Company is justly proud. A successful car in 1910, many refinements in various parts of the chassis have added enormously to its speed, power and capacity for service. Like its companion, the E-M-F "30," it is built in but one chassis style.

THE FLANDERS "20" ROADSTER is an idealization of the car of the same type which traveled last year from Quebec to Mexico City in an uninterrupted journey of 4,127 miles—by all odds the most meritorious motoring feat of the season. It challenges comparison in speed, beauty and durability with any car of its class, regardless of price. It sells for \$700.

THE FLANDERS "20" SUBURBAN is a practical general-purpose car with the square, box type of body and equipped with a detachable rear seat. With this seat in place, the car will carry four passengers easily, and with dispatch. With the rear seat removed, the box deck can be used for the transportation of trunks, boxes, farm produce or similar loads. This model is priced at \$725. Without the detachable seat, it is sold as a Runabout for \$700.

THE FLANDERS "20" COUPE is almost an exact reproduction of the E-M-F "30" Coupe in a smaller size. It has ample room for two passengers and is sold for \$975—a revolutionary price for a car of its power and refinement.

Dealers! The E-M-F Company line is the one you must handle, if you expect to secure the major share of the business in your territory. It will make you prestige, money and friends.

THE E-M-F COMPANY, Automobile Manufacturers
Detroit, Michigan

"Firestone"

TIRES AND DEMOUNTABLE RIMS

Lead at Auto Show

Firestone Tires are first in total equipment at the Grand Central Palace Auto Show.

And there are more Firestone Quick-detachable Demountable Rims than all competing makes combined.

THE FIRESTONE TIRE & RUBBER COMPANY

"America's Largest Exclusive
Tire and Rim Makers"

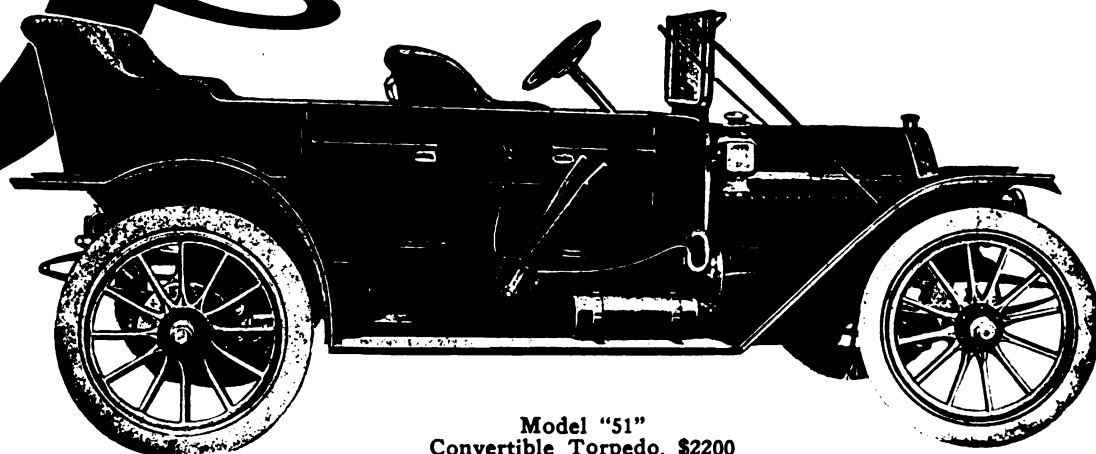
Akron, Ohio

Note:

This considers only the *original* equipment of each car as it reached the floor of the Show. This is the only accurate basis on which to judge the *real preference* of the automobile manufacturer.

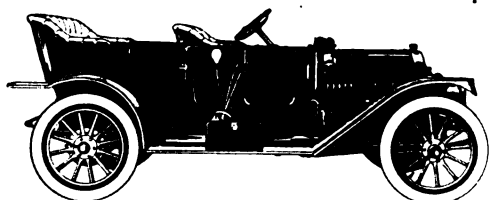
Jackson

1911



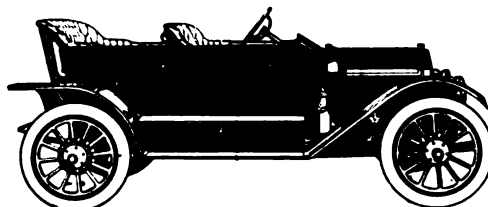
Model "51"
Convertible Torpedo, \$2200

Motor $4\frac{3}{4} \times 4\frac{3}{4}$. Unit power plant. 120-inch wheel-base. Tires 36×4 . Front doors and panels, \$50 extra.



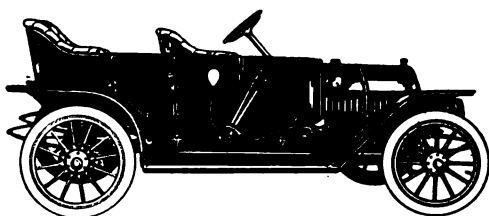
Model "41" Convertible Torpedo, \$1700

Motor $4\frac{1}{2} \times 4\frac{1}{2}$. Unit power plant. 110-inch wheel-base. Tires 34×4 . Front doors and panels, \$50 extra.



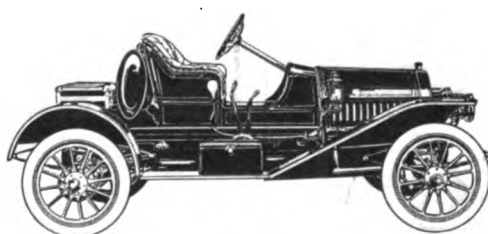
Model "38" Torpedo, \$1650

Full Torpedo. Left-hand drive. Motor $4\frac{3}{8} \times 4\frac{1}{2}$. Unit power plant. 115-inch wheel-base. Tires 34×4 .



Model "30" Convertible Torpedo, \$1250

Motor 4×4 . Unit power plant. 105-inch wheel-base. Tires $32 \times 3\frac{1}{2}$. Front doors and panels, \$40 extra.



Model "29" Roadster, \$1000

Motor 4×4 . 100-inch wheel-base. Tires $32 \times 3\frac{1}{2}$. Gasoline tank in rear.

No
Hill
Too
Steep

No
Sand
Too
Deep

Ten Years of Successful Production

The Jackson Company has built practical, successful automobiles for the past ten years—it has never offered to the public an inferior car. The Jackson plant is complete within itself. Modern machinery and efficient manufacturing methods enable us to produce a car from the raw material—a car which contains the utmost value for the price.

JACKSON AUTOMOBILE COMPANY, Jackson, Mich.

Licensed under Selden patent.

Repairs Cost 43 Cents per 1000 Miles

FOR three years we have been gathering *sworn* mileage and upkeep (repair) statements of Winton Six owners.

Figures covering 30 Winton Six cars, owned and driven in and around New York, Boston, Atlantic City, Philadelphia, Pittsburg, Buffalo, Cleveland, Cincinnati, Chicago, Minneapolis and Los Angeles, and on many long and hard tours, are given on this page.

¶ These 30 cars totaled 350,092.3 miles—more than 14 times the dis-



ance around the earth at the equator.

Fourteen cars ran 148,074.3 miles with absolutely *no repair expense*.

Sixteen cars ran 202,018 miles on a total of \$149.39 *repair expense*.

One car (owned by Mr. J. E. Clenny) ran in three years a distance of 41,173 miles on 30 cents *repair expense*.

¶ Each of these 30 cars averaged 1603.4 miles per month, and 53.4 miles per day. Had to keep moving to do that distance in all weathers.

And the average repair expense for each of the 30 cars was 43 cents per 1000 miles.

¶ That's a world's record that goes straight home to the pocket books of these Winton Six owners.

Motoring did not prove expensive to them.

Because the Winton Six is a car that keeps out of repair shops.

¶ What the Winton Six has done for these owners, it can do for you.

The record established by 30 cars in three years of work is no accident.

It represents car merit, for no car, no matter how carefully petted and nursed, could do such work if the merit wasn't there when the car was designed and built.

¶ The self-cranking 48 H. P. Winton Six touring car sells at \$3000. With four-door body \$3050. We make six-cylinder cars exclusively, and that we make them right is apparent in these wonderful mileage and repair records.

¶ Our catalog gives abundant information about the Winton Six. With it we will send you our Upkeep Book, which presents in detail the facts and figures that put the world's upkeep record at 43 cents per 1000 miles. Clip the coupon and mail it today.

The Winton Motor Car. Co.

Licensed under Selden patent.

Cleveland, O., U. S. A.

WINTON BRANCH HOUSES

NEW YORK.....Broadway at 70th St.
CHICAGO.....Michigan Avenue at 13th St.
BOSTON.....Berkeley at Stanhope St.
PHILADELPHIA.....246-248 No. Broad St.
BALTIMORE.....209 North Liberty St.
PITTSBURGH.....Baum at Beatty St.
CLEVELAND.....Huron Road at Euclid Ave.
DETROIT.....998 Woodward Ave.
KANSAS CITY.....3328-3330 Main St.
MINNEAPOLIS.....16-22 Eighth St. N.
SAN FRANCISCO.....300 Van Ness Ave.
SEATTLE.....1000-1006 Pike St.

THE WINTON MOTOR CAR. CO.
426 Berea Road, Cleveland, Ohio.

Please send Winton Six literature to

Sworn Records of Automobile Upkeep

Car Owner and Address	Year	Mileage	Expense
Axelrod, Jacob, New York.....	†1908	7,570	None
	†1909	17,720	\$60.00
Bacharach, Isaac, Atlantic City.....	1909	11,000	.30
	1910	17,390	3.46
Boothe, S. S., Los Angeles.....	1910	13,526	None
Boutell, W. T., Minneapolis.....	1910	21,127	1.40
Barnsdall, T. N., Pittsburg.....	1909	15,669	31.15
Brennan, Jas. T., Brooklyn.....	1908	6,806	3.00
Burnham, Wm., Philadelphia.....	1909	8,702	None
Cheney, H. M., Toledo.....	1910	14,059	None
Clenny, J. E., Chicago.....	*1908	5,155	None
	*1909	17,003	None
" " ".....	*1910	19,015	.30
Cuddy, Loftus, Cleveland.....	1909	8,728	.30
Daab, Martin, Hoboken, N. J.....	1910	17,130.9	None
Fish, Joseph, Chicago.....	1908	5,535	None
Friedlander, W. J., Cincinnati.....	1910	18,809	.30
Frost, G. W., Montclair, N. J.....	1909	10,595	None
Mallen, H. W., Chicago.....	1909	7,572	1.50
Martin, W. B., Cleveland.....	1909	10,726	7.50
	1910	14,847	None
McAllister, W. B., Cleveland.....	1909	10,788	26.55
Petersen, L. T., Youngstown, O.....	1910	15,790	None
Phipps, H. J., Boston.....	1910	14,208	1.50
Pickands, H. S., Cleveland.....	1908	6,632.8	None
Roelofs, H. H., Philadelphia.....	1908	5,415	None
Rooney, E. A., Buffalo.....	1908	4,594	.10
Schnaier, Milton, New York.....	1908	11,683	12.00
Somers, Warren, Atlantic City.....	1908	6,183	.03
Speare, Mrs. L. R., Boston.....	1908	6,113.6	None
Totals.....		350,092.3	\$149.39

* Same car three years. † Same car two years.

Average Upkeep Expense for 30 Cars—43 Cents per 1000 Miles.



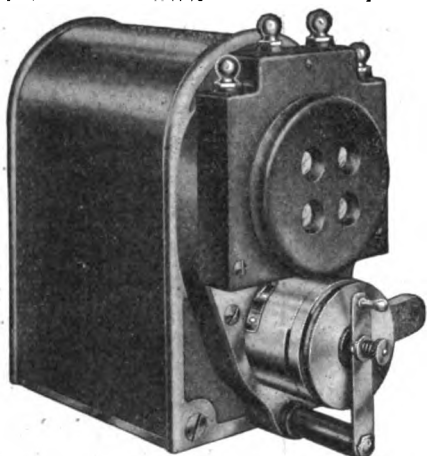
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Magneto and Shock Absorber will give you maximum efficiency, real economy and absolute comfort.

THE MAGNETO

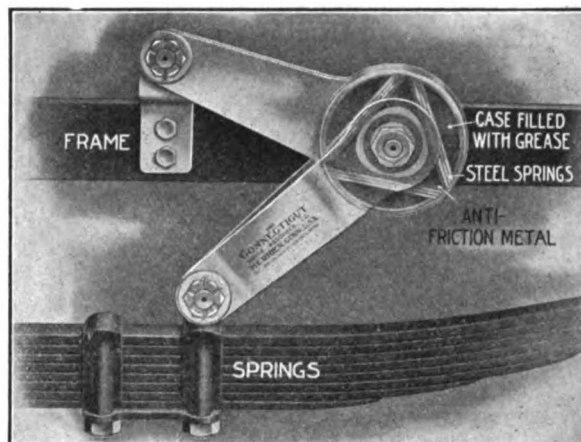


We have successfully solved every ignition problem in this magneto. Its design is excellent—simple and free from complications. It is the best magneto, money, brains and experience can produce.

With the CONNECTICUT Magneto you will find relief from petty troubles inherent in all other ignition systems. An ignition system which may be forgotten after once being installed and adjusted.

It is so SIMPLE, ACCESSIBLE and RELIABLE that you require neither the skill of a watchmaker, nor the experience of an electrician to UNDERSTAND. Write us for catalog No. 54.

THE SHOCK ABSORBER



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No charge for attaching! Think what that means. Installing stations have been appointed in each large city. They are at your service. When we say that this shock absorber is infinitely superior to any similar device we sum up the whole situation.

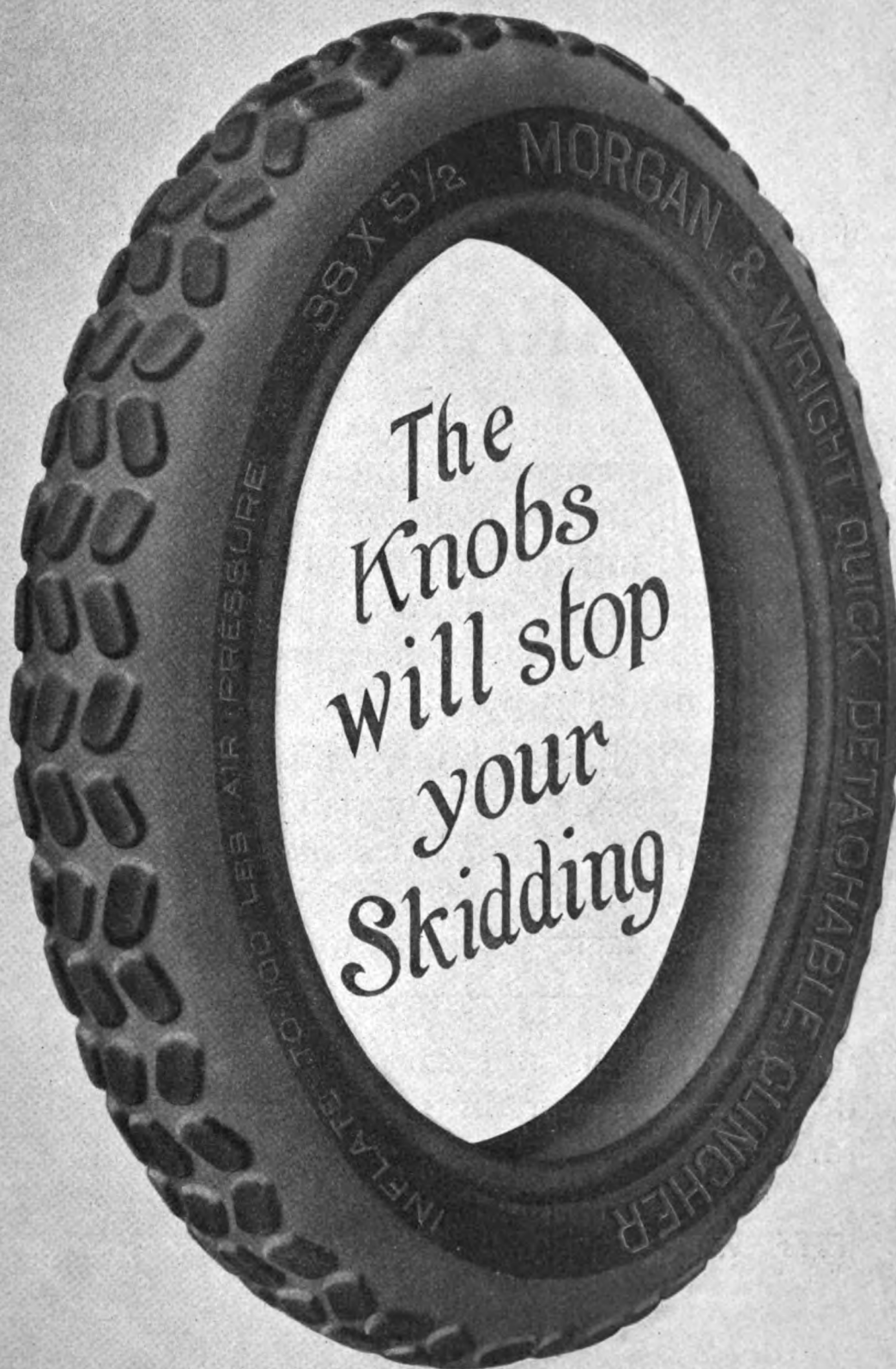
No friction, hydraulics, or pneumatics. Just a plain, simple, scientific principle proven absolutely correct. No braking effect on normal movement of car. No adjustment after once properly installed.

We send you CONNECTICUT absorbers for a free ten-day trial if you'll mention name, year, model and weight of your car. Write for free catalog No. 24.

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NOBBY TREAD TIRES

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MORGAN & WRIGHT TIRES
ARE GOOD TIRES

SOLD EVERYWHERE

OVERLAND PRICES GUARANTEED

The 1911 catalogue prices of Overland automobiles were determined on September 1, 1910, based solely and wholly upon their actual intrinsic value, and these prices are guaranteed to remain unchanged until July 31, 1911, by which time all of this season's models will have been delivered.

We have no branch houses, no cars stored in warehouses, every Overland delivered being shipped within three days after its completion in the largest independent automobile factory in the world.

Overland spells not only satisfaction to dealer and owner, but a safe investment for both.

THE WILLYS-OVERLAND COMPANY
TOLEDO, OHIO



Vol. XXVI.

New York, U. S. A., Thursday, January 5, 1911.

No. 1

TIRE GRIP PATENT GETS A SETBACK

Circuit Court of Appeals Reverses the Decision Favorable to Parsons-Weed Patent—Victory for Zigzag.

On Tuesday, 3d inst., the United States Circuit Court of Appeals for the Seventh District, sitting in Chicago, handed down a decision reversing the action of the lower court in the Weed-Parsons case against the Excelsior Supply Co. and the Motor Appliance Co., of Chicago, and thereby declared that the Zigzag tire chain grip, made and marketed by the Chicago concerns, is not an infringement of the Parsons patent. The lower court in question, the United States Circuit Court for the Northern District of Illinois, Eastern Division, upheld the Parsons patent on May 20th last, and in doing so expressed the opinion that the Parsons patent "is basic to a large extent" and that the Zigzag grip "is almost identical" with the Weed-Parsons device. In view of this language, the nature of the reversal of judgment is apparent.

The action of the Court of Appeals of course gives the Zigzag grip unchallengeable standing throughout the whole country, but the decision does not affect the suits involving chain grips of other manufacture, of which a large number are pending in other circuits and which the Weed Chain Tire Grip Co. in a statement issued yesterday announced will be pressed to conclusion.

"We are advised that in view of favorable decisions already rendered in other circuits," says the Weed company in this statement. "our ultimate success in such courts is probable, and it is therefore our intention rapidly to prosecute to conclusion other cases now pending and at the first opportunity to carry the litigation to the Supreme Court of the United States for final adjudication."

It is exceedingly rare, however, that the Supreme Court takes cognizance of patent litigation, and it is stated that nothing short

of radically disagreeing opinions on the part of two different circuit courts of appeal in super-important cases would be likely to induce the highest tribunal to consent to review the proceedings.

The setback which the patent, No. 723,299, of March 24, 1903, received in the West, followed close on the heels of favorable proceedings in the East, Judge Lacombe, sitting in the United States Circuit Court in New York City, having on Friday last issued a permanent injunction against the Automobile Tire Co., of New York, and a preliminary injunction against Alfred B. Norwalk and his Thirty-five Per Cent Auto Supply Co., of New York, restraining them from selling or in any way dealing with chain tire grips infringing the Parsons patent. The injunctions were the result of proceedings brought by the Weed Chain Tire Grip Co., which controls the Parsons patent.

For a Dealers' Protective Association.

Although it never before had been heard of, cards are being circulated at the Grand Central Palace show soliciting membership for what is styled the National Automobile Dealers' Protective Association, which, according to the card, already has been incorporated. The movement appears to spring from the promoters of the show, who had to do with an organization in the carriage trade bearing an analogous title.

"Electric Car" Finally Replaces "Carriage."

Its newer productions having become so much more important than the old ones, the Anderson Carriage Co., of Detroit, makers of the Detroit electric, has changed its title to the Anderson Electric Car Co. The personnel of the company, however, remains unchanged.

General Motors' Offices Go to Detroit.

The general offices of the General Motors Co. henceforth will be located in Detroit, the removal of the effects from New York having been in gradual process for several weeks. In Detroit, the offices will occupy two floors in the Buick building at 127 Woodward avenue.

UNITED STATES TIRE CO. IS BORN

Sales Departments of Four Big Factories are Merged—Men Already Chosen to Manage Radical Reorganization.

Under the laws of New York there was incorporated this week the United States Tire Co., with nominal capital of \$500,000, and which, although the name does not suggest it, marks the first step toward a radical re-organization of the sales system of four of the biggest and best-known tire companies identified with the automobile industry, viz: The Hartford Rubber Works Co., Morgan & Wright, the G. & J. Tire Co. and the Continental Caoutchouc Co., all of which are constituents of the Rubber Goods Mfg. Co., which in turn is a branch of the United States Rubber Co.

Although members of the same family, the four tire companies usually have not conducted themselves as such. They have competed and otherwise engaged in keen commercial strife one with the other exactly as if the family tie did not exist and as if their parent ultimately did not bear the cost of such doings. It chiefly is to rectify this state of affairs that the United States Tire Co. has been formed. It will take over the sales departments and branch stores of the four companies and henceforth conduct them as one and generally keep the family relation close and harmonious.

E. S. Williams, president of the Rubber Goods company, is the president of the United States Tire Co., and C. J. Butler, president of Morgan & Wright, is the vice-president. The other officials have not been elected, but the plan of organization already has been so well advanced that the men who will assume direction of the immediate affairs already have been chosen. They are J. M. Gilbert, general manager of the Continental Caoutchouc Co., who becomes general manager of the United States Tire Co., and J. D. Anderson, president of the Hartford Rubber Works Co., who will be the general sales manager.

Instead of the four separate sales departments that now exist, the country will be divided into three districts, each in charge of a district manager who has won his spurs as follows: Eastern District, O. S. Tweedy, with offices in New York; Central District, A. I. Philp, with offices in Chicago; Pacific Coast District, Joseph Weston, with offices in San Francisco. At present Tweedy is sales manager of the Continental company; Philp is vice-president and sales manager of Morgan & Wright, and Weston is secretary of the latter company. The headquarters of the United States Tire Co. itself will be located in New York.

The four manufacturing companies will retain their respective corporate existence and their officials will not be disturbed, but henceforth everything relating to the purchase or sale of tires will be conducted through the new organization. As fully three-fourths of the 1911 business already has been written, however, the full effects of the new arrangement will not become apparent until next fall. One of the most immediate steps will be the concentration of the various branch stores which now are separately maintained. In a number of cities there are as many as four of them, and in such places and wherever else more than one branch exists they will be consolidated into one establishment and operated under the corporate title United States Tire Co. Each of these consolidated branches will carry tires made by the four factories concerned. None of the four brands will be sacrificed or pushed to the disadvantage of the other, but there no longer will be such competition between them as has existed. Each brand will carve its own future on what is reckoned a logical and better ordered system.

"The re-organization and concentration is a perfectly logical step," said Manager Gilbert in speaking of the matter. "There is nothing new about it. It is in line with the best business thought, and, in fact, with the spirit of the times. There has been no secret about the ownership of our four companies. From the beginning it has been well and widely known that they all are under the roof tree of the Rubber Goods Mfg. Co., and it is illogical that they should continue to be rivals and to pull against each other. The intention is that henceforth they shall pull together on the 'one-for-all and all-for-one' principles, and to present a united front to the 'common enemy,' so to speak. All our factories always have made high-grade tires and high-grades only, and they will continue to do so. While lessening the expense of marketing them is the chief purpose of the new arrangement, cheapening the cost of our products is no part of the policy. Each brand is an asset and such internal competition as will exist will rest in factory rivalry to produce the best tire. The new sales system will contribute to that result by

equalizing or at least more evenly distributing the volume of production, and it will also offer conveniences and advantages to purchasers of tires, whether large or small quantities, than can be offered when four different sets of family rivals all are tugging at and more or less entangling the same string."

Changes Among Prominent Tradesmen.

E. R. Hand has been appointed sales manager of the Babcock Electric Carriage Co., of Buffalo. Previously he was assistant sales manager of the E. R. Thomas Motor Co.

J. T. Langhorne has been promoted to the post of manager of the Packard Motor Car Co.'s truck department. Originally engaged in the adding machine trade and later in the automobile business in Boston, Langhorne has been in the Packard service for some time.

S. B. Dusenberre has been appointed manager of the touring-car department of the Alden Sampson Mfg. Co. Previously he was engaged in special work for the Brush Runabout Co., and before his entry into the automobile industry he was vice-president of the Westinghouse Storage Battery Co., which he organized.

Joseph W. McKaye, secretary of the Wetherill Finished Castings Co., of Philadelphia, has resigned that office. He has not yet indicated his future plans.

Monroe Controls Two Body Factories.

R. F. Monroe, mayor of Pontiac, Mich., and president of the Monroe Body Co., of that city, last week purchased the interests of the minority stockholders in the Yeomans Body & Box Co., of Detroit, and thus acquired full control. In July last Mr. Monroe took over the Yeomans body factory, giving therefor \$162,500 in stock in his own \$500,000 company, and it is this stock which he purchased. When the first deal was completed in July, Monroe became president and general manager of the Yeomans company, and these offices he retains, but the Yeomans interests step out, J. M. Parker, of Pontiac, becoming secretary and Charles R. Talbut, of the National Bank of Commerce of Detroit, treasurer. Heretofore the Pontiac and Detroit plants, each of which employs about 300 men, have been confined to the production of wood bodies, but preparations are being made to add a metal-body department.

Barnes Perfects His Sales Organization.

Claire L. Barnes & Co., recently formed in Detroit to market the output of several well known factories, has located its general offices in the McCormick building in Chicago and a branch office in the Metropolitan Life Insurance building in New York. The original office in the Penobscot building in Detroit will be continued as a

branch in charge of Charles M. Hale, who has been designated central sales manager. The Western sales manager is E. J. Northwood, formerly with the Packard Motor Car Co.; he will have headquarters in Chicago. The Eastern and Pacific Coast managers have not yet been appointed.

Crow to Market the Black-Crow Cars.

The Crow Motor Car Co., of Elkhart, Ind., which made Black-Crow cars for the Black Mfg. Co., of Chicago, which was placed in the hands of a receiver two weeks since, had canceled its contract with the latter previous to its failure, and established a general sales office in the Rector building in Chicago, in charge of C. C. Darnell, who previously had been identified with the Black company. The Crow company purposes to continue to make the Black-Crow car and, as indicated, to market them directly to agents.

To Make an Inner Tube in Cincinnati.

The Auto Tire Interlining Co., which has been organized in Cincinnati, Ohio, has leased quarters at Broadway and 8th street, in that city, and purposes producing a patented inner tube. The president of the company is William Stacey, of the Stacey Auction and Storage Co. George S. McDuff is secretary and treasurer.

Frontier Begins Tire Making in Buffalo.

The Frontier Rubber Co. has commenced the manufacture of automobile tires in Buffalo, N. Y. The president of the company, which recently was incorporated with \$10,000 capital stock, is C. F. Benzig, who also is treasurer; Dr. John J. Stowe is vice-president, and C. A. Castor secretary and superintendent.

Five-Story Factory for Fisher Bodies.

The Fisher Closed Body Co., of Detroit, which recently let contracts for the erection of a three-story brick factory in that city, already has enlarged the original plan. The structure now will be one of five stories, and will afford 100,000 feet of floor space for the wood and metal bodies that will be produced.

Final Dividend for Petrel's Creditors.

The court last week declared a final dividend of 15 per cent. from the estate of the Petrel Motor Car Co., of Milwaukee, which went into bankruptcy last year. After the failure the plant was purchased by the Filer-Stowell Co., of Milwaukee, which has continued the manufacture of the Petrel car.

Bower Building Roller-Bearing Plant.

The Bower Roller-Bearing Co., of Detroit, has commenced work on its plant on Hart street, between Goethe and Charlevoix avenues. It will be a one-story brick and concrete structure, costing about \$15,000.

EXPORTS MOVE UP 69 PER CENT.

**No Interruption in Long Continued Rise—
Notable Gain in "Other Europe" Feature
of November Business.**

Export statistics for the month of November, 1910, reveal a continuance of the remarkable expansion that has characterized the year, the figures for the respective months of 1909 and 1910 being \$563,956 and \$952,703, a gain of 69 per cent. In this sum complete cars exported in November, 1909, are represented to the number of 464, valued at \$464,567; as compared with 675, valued at \$818,054, in the same month of 1910.

The most striking increase is registered by the division Other Europe, which augmented its purchases of \$9,597 worth in November, 1909, to \$102,583 worth in the same month of the succeeding year, a gain of over 1,300 per cent. Other notable gains were shown by the United Kingdom, where \$63,992 expanded to \$141,133 worth; by Canada, which purchased \$258,715 worth, as compared with \$141,647 worth in the same month of the preceding year; South America, which took more than twice as many cars in November, 1910, than it did in the same month of 1909, the figures being \$111,256 and \$52,965 respectively; and by British Oceania, which nearly tripled its purchases, jumping from \$54,700 to \$134,956. Losses were registered by the West Indies and Bermuda (—\$26,838); Mexico (—\$9,466); Germany (—\$6,990), and Other Countries (—\$5,064).

Corresponding to the steady gains evidenced during the individual months of the past year, the figures for the eleven months ending November 30, 1910, show substantial increases over those of the same period of the year 1909. While the exports during the 11 months' period of 1909 amounted to but \$7,186,582 worth, those of the following year reached the record height of \$12,144,341, a gain of 69 per cent. Canada occupies the leading place, with \$4,681,098; the United Kingdom is second, with \$2,639,304; Other Europe third, with \$744,545; France fourth, with \$719,527. The report in detail:

	November		Eleven Mo.'s End'g November.		
	1909	1910	1909	1909	1910
Automobiles and Parts Of—					
Automobiles	\$464,567	\$818,054	\$4,116,476	\$6,385,600	\$10,339,905
Parts of (not including tires)...	99,389	134,649	567,947	800,982	1,804,436
Exported To—					
United Kingdom	63,992	141,133	1,661,974	1,903,764	2,639,304
France	28,036	39,770	548,283	817,771	719,527
Germany	14,121	7,131	158,804	172,095	330,129
Italy	9,140	9,593	237,519	223,570	365,115
Other Europe	9,597	102,583	204,178	312,565	744,545
Canada	141,647	258,715	1,075,366	2,262,247	4,681,098
Mexico	75,084	65,618	283,395	450,237	637,580
West Indies and Bermuda.....	58,787	31,949	179,586	290,924	353,715
South America	52,965	111,256	107,244	211,666	445,593
British Oceania	54,700	134,956	75,831	247,037	548,397
Other Asia and Oceania.....	33,990	33,166	118,491	172,206	485,164
Other countries	21,897	16,833	53,752	122,500	194,174
Total.....	\$563,956	\$952,703	\$4,684,423	\$7,186,582	\$12,144,341

Tire Prices Come Down Another Notch.

Without previous intimation, the price of tires dropped another notch on the 1st inst., when at least three of the big manufacturers, the Diamond, Fisk and Goodrich companies, announced a reduction of 10 per cent. on casings; the price of inner tubes also was lowered, the reduction amounting to 10 per cent. in two instances and 6 per cent. in the other. This is a net reduction of 25 per cent. in 30 days, 15 per cent. having been dropped off on December 1. The latest paring of price is taken to mean that the tire manufacturers now are making use of rubber purchased after the crude gum fell from the dizzy height which it had attained. The best grades now are quoted at about \$1.35 per pound or from three to five cents lower than when news of the December reduction first became public. About a year ago it was not far from the \$3 mark, reaching \$2.86 before it finally began to topple like the stick of a sky-rocket.

License Supersedes Hotchkiss Injunction.

On Thursday last a decree by consent was issued by Judge Lacombe, sitting in the United States Circuit Court, in the case of the Columbia Motor Car Co. against the Hotchkiss Import Co. for infringement of the Selden patent. The usual injunction was issued, but since the suit was instituted the Hotchkiss company made its peace with the Selden people and has been granted a Selden license, the action of the court was purely formal and the injunction is of no effect, having been superseded by the terms of the license.

Smith, of Topeka, is Declared Bankrupt.

The affairs of the Smith Automobile Co., of Topeka, Kas., makers of the Great Smith car, have taken a turn for the worse. When the concern was placed in the hands of a receiver, it was thought that one of several plans for reorganization would be consummated, but after delaying action for this reason, the court finally has adjudicated the company bankrupt, and named J. G. Stonecker referee. Despite the fact, hope of a reorganization has not been entirely abandoned.

CHICAGO BORROWS FROM FRANCE

Goes Back to Time of French King for Decorative Theme—English Garden, However, Again Will Do Duty

If Louis XV could secure leave of absence and contrive to drop into the Chicago Coliseum any time between January 28 and February 4 next, probably he would find cause for homesickness. For the designers of the Chicago show have gone back to the time of that particular French potentate to find their decorative theme.

In announcing the fact, the "accelerator" of the show does it so blithely that civil war between Boston and Chicago is not unlikely to result. He claims for Chicago the credit and glory of having instituted a uniform character of decoration, and proudly proclaims that after many years, even Paris "followed Chicago's lead." The "accelerator" apparently does not know that before Paris followed Chicago, Chicago followed Boston.

Last year, that part of the Chicago show which was located in the Coliseum was set in an English garden, with genuine red brick walls, genuine metal railings and gates, genuine flowers and giant trees that once had grown in a real forest, and though the main setting for the forthcoming show will be French, the English garden will not be wholly lost to view. When it was torn down last year, it was carefully packed in camphor and, "by special request," it will be unpacked and set up in the First Regiment Armory, where the overflow always is staged, and where in 1910 real flowers and rustic bowers without brick walls did duty.

Of the new Louis XV dressing for the Coliseum, it is stated that probably the most striking features will be the ceiling and four gigantic fountains. The entire roof of the building, 300 x 175 feet, will be hidden by a painting representing stained glass supported on massive scrolls of bronze.

The main floor of the Coliseum will be divided into four sections, each 113 x 47 feet. In the center of each section a fountain will be erected 30 feet wide at the base and 38 feet high. The central column will be illuminated, as will also a huge lantern at the top. Water will fall in a four-foot column from a height of 28 feet. Stretching away to right and left will be illuminated shell-shaped vases mounted 10 feet in the air on ornamental bases, each vase being about six feet high by five feet wide. Between them will be lamp posts bearing clusters of 12-inch and 16-inch lighted globes. The beauty of all these features will be enhanced by floral decoration.

At the aisle fronts of the central spaces lamp posts bearing 12-inch globes and vases

and real flowers will mark the entrance to the spaces. On the opposite side of the aisle, entirely covering the iron girders which support the building, massive pillars will extend from the floor to the gallery, each pillar about 18 feet high, of design to correspond with the fountains and other central features. These will support the ceiling, also of ornate construction, through which at intervals of 11 feet, will protrude 500-watt Tungsten burners, this being the first demonstration on a large scale of this new light in Chicago. The illumination of the building as a whole will be more elaborate and more brilliant than heretofore.

The gallery will be similarly treated. The present seating will be covered by a temporary platform to accommodate exhibits of accessories. The scene along the front will correspond with the ceiling, and at each truss, 24 feet apart, there will be an ornamental column with an illuminated cap. Running back from these columns will be ornamental panels which will enclose the iron girders. Similar effects will be produced on the three floors of the Annex.

Barnes to Sell the Pontiac Castings.

Claire L. Barnes & Co., of Chicago, who already have the sales agency for the Billings & Spencer forgings and tools, and the E. B. Wagner Mfg. Co.'s die castings have added the representation of the Pontiac Foundry Co. to their account. They will handle the entire output of the latter concern which recently commenced business in Pontiac, Mich., and which is one of a group of new and related industries which has been started there that are generally styled "the Flanders' projects," the president of the E-M-F Co. being a large shareholder in each. Gray iron, brass, bronze and aluminum castings comprise the productions.

Black's Receiver Seeks Assets in Indiana.

On his own petition Frank W. McKey, who two weeks since was appointed receiver for the Black Mfg. Co., of Chicago, which marketed the Black-Crow car, has been designated ancillary receiver in Indiana. In his petition McKey alleges that in the Crow Motor Car Co.'s factory in Elkhart, Ind., there are automobiles, parts, etc., to the value of about \$24,000 which belong to the Black company, of which he desires to obtain possession.

Refuses to Reduce Duty on Ignition Cable.

An appeal of the Packard Motor Car Co. designed to obtain entry of imported ignition cable under the 35 per cent. duty applying to India rubber has been denied by the Board of United States General Appraisers. The board held that the shipment constituting the test case was properly assessed at 40 per cent. as "telephone and other wire and cables composed of rubber and metal," specified by paragraph 135 of the Tariff Law.

IN THE RETAIL WORLD.

Samuel Netherton, of Roberts, Ill., has purchased the garage of Moore & White in Piper City, Ill.

Work has been started on a garage in Newark, N. J., by George Shafer. It is located at the corner of Custer avenue and Bergen street.

Wm. Wagner & Sons are building a brick garage at Clifton and Lackawanna avenues, Newark, N. J. The structure will be 65 x 90 feet, and will cost \$10,000.

The Bering Tire & Rubber Co. has been formed in Houston, Tex., with A. C. Bering, Jr., as manager, and has located at 511 Travis street. It has the state agency for Empire tires.

Hernandez & Barasorda, of San Juan, P. R., large operators in timber, have secured



FIRESTONE'S NEW SAN FRANCISCO BRANCH

the agency for Velie cars for the entire island. It is their purpose to erect a garage in San Juan and to appoint sub-agents in all of the larger towns in Porto Rico.

Incorporated with a capital of \$50,000, a new company has opened a salesroom and garage at 1115 Farnam street, Omaha, Neb., under the style the National Auto Supply Co. H. E. Wilcox is president and A. M. Baugh sales manager.

Glenn R. Sawyer has been appointed receiver for the Industrial Automobile Co., in Elkhart, Ind. The claims filed against the company are placed at \$3,899.09, although the total liabilities are \$4,313.59. The assets are considerably less than this amount, their exact value being difficult of determination.

A voluntary petition of bankruptcy has been filed in the Federal Court in Guthrie, Okla., by the Central Motor Co., of Oklahoma City, of which J. N. Sheplar is president and J. A. Niblo, secretary. The liabilities amount to \$14,547, including a chattel mortgage for \$8,577 held by the Central Reserve Bank, while the assets are valued at \$10,355, this including six automobiles

worth \$6,600, on which the Central bank already has foreclosed.

A. E. Morrison, of the Morrison-Cole Motor Car Co., of Los Angeles, Cal., has purchased the interest of his partner, Capt. F. W. Cole, and will conduct the affairs of the company alone. His partner is interested in the Pacific Motor Car Co., and will devote all his time to the latter, while Capt. Cole's son, who for a time held a tentative agency for Cole "30" cars, joined his father in the Pacific company.

The first combination garage and airship station is to be built in Cambridge, Mass., by Moses H. Gulesian, of Boston, who last week purchased land for the purpose. The building will cover 184,500 square feet, the lower floor comprising a big garage, and the upper floor and roof being devoted to the aeroplane. The lot on which the building is to be erected has a frontage of 520 feet on the Charles River boulevard, and 415 feet on Pleasant street, and comprises 4½ acres. Several elevators and a wide inclined plane will connect the garage with the airship department.

Hartford's Demountable for Solid Tires.

That the demountable rim is henceforth due to cut as vital a part in the sphere of commercial vehicles as it is playing in the world of pleasure cars, was further evidenced this week when the Hartford Rubber Works Co., Hartford, Conn., made known that it has ready for marketing a new demountable rim for use with solid tires, either of the single or twin types, and one which has added merit of being applicable to any wheel which already is fitted for the standard types of side flanged or side wire solids. The device is the invention of C. B. Whittelsey, superintendent of the Hartford company, and is to be known as the Whittelsey Demountable, and that it will add impetus to the demountable rim movement is undoubted.

The principle of the invention is the familiar wedge ring. The inner surface of this rim is beveled inward from both sides to correspond with the taper of the wedges. One wedge ring is forced into place from either side of the wheel, thus centering and locking the rim in position. The wedge rings, in turn, are held in place by means of eight small lugs, which are secured by bolts passing through the holes already in the rim. Where twin tires are used the method of attachment is the same except that a double wedge ring is first placed in the center of the felloe band to form the inner seat for each of the two individual rims. The locking device is exactly the same as with the single form of tire. In order to provide against irregularities in wheel and band diameters, the wedge rings are split and sufficient clearances allowed to permit of absolute seating of the wedges and to forestall any possible springing of the rims while in use on the heavy trucks.

THE WEEK'S INCORPORATIONS.

Detroit, Mich.—Chief Motor Car Co., under Michigan laws, with \$200,000 capital.

Coldwater, Mich.—Boucher & Moore Auto Co., under Michigan laws, with \$2,000 capital.

Detroit, Mich.—American Ignition Co., under Michigan laws, with \$25,000 capital; to manufacture ignition specialties.

Milwaukee, Wis.—Mickleson Motor Co., under Wisconsin laws, with \$30,000 capital. Corporators—F. M., J. A., G. A. Mickleson.

Detroit, Mich.—Lore, May & Co., under Michigan laws, with \$3,000 capital, of which \$1,000 has been paid in; to manufacture engines and motor cars.

Nashville, Tenn.—Noble S. Bruce Auto Co., under Tennessee laws, with \$10,000 capital. Corporators—F. J. Rowan, W. J. Moroney, I. R. Golden.

Collinsville, Ill.—Yates-Brooks Automobile Co., under Illinois laws, with \$5,000 capital. Corporators—C. A. Yates, Elgin S. Brooks, E. W. Brooks.

Plainfield, N. J.—Wilcox Auto Co., under New Jersey laws, with \$25,000 capital; to manufacture automobiles. Corporators—A. R. Wilcox, A. S. Logan.

Massillon, Ohio—Croxtan Motor Co., under Ohio laws, with \$250,000 capital; to manufacture automobiles. Corporators—H. A. Croxtan and others.

Chicago, Ill.—Anderson Carriage Co., a corporation of Michigan, admitted to do business in Illinois. Michigan capital, \$1,200,000; Illinois capital, \$20,000.

Peoria, Ill.—Reliance Motor Co., under Illinois laws, with \$11,500 capital; to deal in automobiles. Corporators—F. D. Banta, A. G. Brockway, Emil Metzger.

Wilmington, Del.—Motor Truck Co., under Delaware laws, with \$300,000 capital. Corporators—W. J. Maloney, M. C. Taylor, E. B. Davis, of Wilmington.

Cincinnati, Ohio—Atlas Auto & Supply Co., under Ohio laws, with \$10,000 capital. Corporators—H. A. Welland, Hans Richard, Harold B. Gibbs, F. B. Williams.

Milwaukee, Wis.—Universal Mfg. Co., under Wisconsin laws, with \$25,000 capital; to manufacture steering gears for motor cars and trucks, and automobile parts.

Chicago, Ill.—National Motor Service Co., under Illinois laws, to deal in accessories and supplies. Corporators—C. O. Garmire, R. Leington, J. H. Hoglund.

Detroit, Mich.—Simplex Differential Clutch Co., under Michigan laws, with \$25,000 capital. Corporators—Harry E. Perrault, William J. Brand and others.

Whitehall, Wis.—Auto Sales Co., under Wisconsin laws, with \$8,000 capital. Corporators—R. S. Cowill, G. S. Rice, C. S. Melby, P. M. Lambert, W. L. Lambert.

Cincinnati, Ohio—Auto Tire Interlining Co., under Ohio laws, with \$25,000 capital;

to manufacture a patented inner tube. Corporators—William Stacy, G. S. McDuff.

Washington, D. C.—Washington Motor Transfer Co., under Delaware laws, with \$25,000 capital. Corporators—G. H. Beall, J. G. Hall, B. F. Anderson, of Washington, D. C.

Helena, Mont.—Helena Taxi Co., under Montana laws, with \$10,000 capital, of which \$3,160 has been paid in. Corporators—Eugene Wenzler, C. A. Shaffle, R. W. Dogett.

Amarillo, Tex.—Amarillo Auto Supply Co., under Texas laws, with \$20,000 capital; to deal in accessories. Corporators—T. M. Hand, A. W. McSpadden, M. C. McMaster.

Kennebec, Me.—Sinuous Spring Wheel Co., under Maine laws, with \$1,000,000 capital; to manufacture wheels for automobiles. Corporators—E. M. Leavitt, of Winthrop, Me., and others.

New Haven, Conn.—White Motors Co., under Connecticut laws, with \$5,000 capital, of which \$2,000 has been paid in. Corporators—P. Raymond Greist, Hubert M. Greist, William A. Rutz.

Detroit, Mich.—McIntosh Auto Co., under Michigan laws, with \$10,000 capital; to do general automobile supply business. Corporators—William J. Marshall, Lewis E. Maire, C. Henry Klick.

Boston, Mass.—Jamaica Plain Auto Co., under Massachusetts laws, with \$50,000 capital; to deal in automobiles. Corporators—J. D. Henderson, Dorchester; J. R. McPherson, Jamaica Plain.

Grand Rapids, Mich.—Ignition Starter Co., under Michigan laws, with \$50,000 capital; to manufacture ignition apparatus. Corporators—John W. Fitzgerald, W. W. Annable, George O. Seeley and others.

Chicago, Ill.—Grabowsky Power Wagon Co., under Illinois laws, with \$25,000 capital; to deal in automobiles, automobile wagons and accessories. Corporators—H. L. Neuman, Ella O'Connor, W. W. Witty.

Omaha, Neb.—National Auto Supply Co., under Nebraska laws, with \$50,000 capital; to deal in automobiles and accessories. Corporators—H. E. Wilcox, of Omaha; W. H. Baugh, of Hastings; A. M. Baugh, of Fremont.

Greensboro, N. C.—Marion Motors Southern Co., under Carolina laws, with \$25,000 capital; to manufacture motors, power generators, carriages, wagons, boats, etc. Corporators—A. Fairbrother and others.

Columbus, Ohio—Columbus Carburetor Co., under Ohio laws, with \$10,000 capital; to manufacture automobile carburetors. Corporators—J. T. Adams, J. A. McDowell, D. H. Thomas, Thomas A. Swarts and Daisy Strader.

Pelzer, S. C.—Saluda Automobile & Machine Co., under South Carolina laws, with

\$5,000 capital; to manufacture automobiles, gasoline motors and machinery. Corporators—W. R. Dendy, M. L. Sullivan, R. W. Poore, all of Pelzer.

Chicago, Ill.—French Auto Top & Supply Co., under Illinois laws, with \$2,000 capital; to manufacture and deal in automobile, carriage and wagon tops. Corporators—Emil C. Wetten, Charles H. Pegler, J. H. Christensen, Sr.

Rochester, N. Y.—Rochester Accessory Mfg. Co., under New York laws, with \$3,500 capital; to manufacture automobile accessories. Corporators—Mark A. Adler, Milton S. Adler, of Hart street; Ernest F. Talmitch, of 18 Rundel park.

Boston, Mass.—H. J. Koehler Sporting Co., of Boston and New York, a New York corporation admitted to do business in Massachusetts, with a capital of \$25,000. Corporators—Elbridge R. Anderson, George A. Sweetser, Thomas L. Wiles.

Salt Lake City, Utah—Arvis Motor Co., under Utah laws, with \$25,000 capital; to manufacture and deal in motors. Corporators—Reinhold V. Smith, J. Fenson Smith, Joseph V. Smith, Archibald C. Milner, all of Salt Lake City, and William S. Bing, of San Diego. Reinhold V. Smith holds 99,996 of the 100,000 shares.

Increases of Capital.

Detroit, Mich.—Wilson Body Co., from \$250,000 to \$750,000.

Eau Claire, Wis.—Tomberg Auto Co., from \$25,000 to \$50,000.

Jackson, Mich.—Imperial Automobile Co., from \$150,000 to \$450,000.

Detroit, Mich.—Hupp Motor Car Co., from \$250,000 to \$500,000.

Chelsea, Mich.—Grant & Wood Mfg. Co., from \$1,000,000 to \$1,250,000.

Milwaukee, Wis.—Milwaukee Motor Car Co., from \$50,000 to \$250,000.

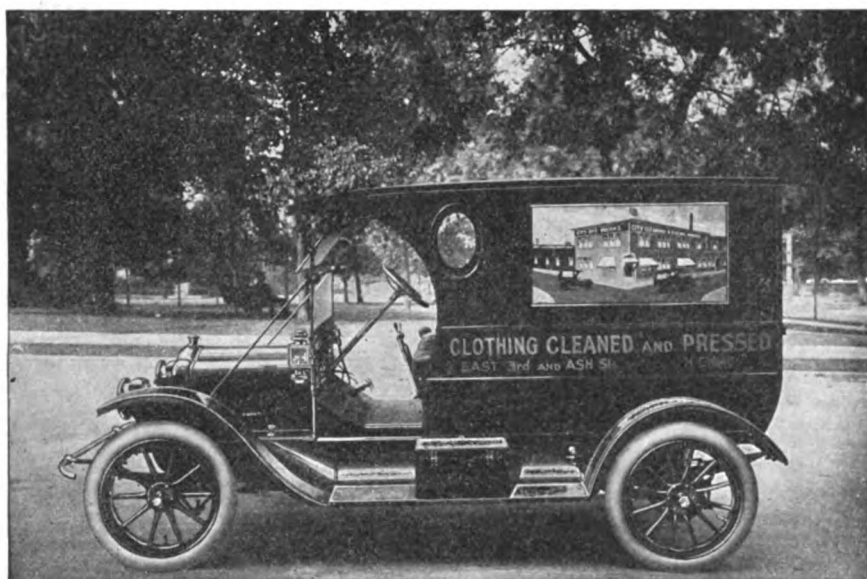
Evansville, Ind.—Tellwock Automobile & Mfg. Co., from \$20,000 to \$50,000.

Alden Sampson Re-Elects Old Officers.

At the annual meeting of the Alden Sampson Mfg. Co., of Pittsfield, Mass., and Detroit, Mich., all of the old officers were re-elected as follows: President, Benjamin Briscoe; vice-president, Morris Grabowsky; treasurer, Frank Briscoe; secretary, G. E. Mitchell, and assistant treasurer, Fred C. Winckler. The latter is a newly created office, but Winckler has been connected with the Sampson company in Detroit for some six months.

Diamond Locates a Branch in Toledo.

Although the factory itself is located in what is practically a neighboring town, the Diamond Rubber Co. has established a branch in Toledo, Ohio, at 710 Madison avenue; it has been placed in charge of C. W. Greene.



The Best Proposition for the Dealer

IF you are a dealer in vehicles and have watched the encroachment of the automobile trade, perhaps even affiliated yourself with the automobile industry and added touring cars to your line, you still may have found the problem of a successful paying business unsolved. The competition in touring cars is keen—there are so many products—so many claims—so many talking points that it is difficult for real merit to be demonstrated. But in the line of commercial vehicles—the trucks and delivery wagons, competition is much less keen. In fact, one can enumerate on the fingers of one hand the number of manufacturers who have successfully produced motor trucks.

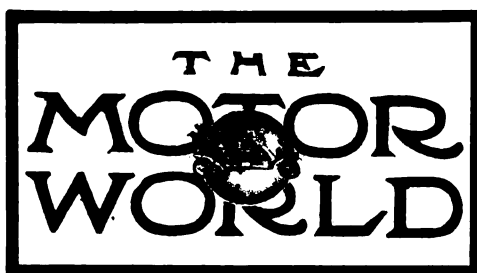
White Motor Trucks Conspicuous among these is the White Company. Our one and a half and three ton trucks and fifteen-hundred pound delivery wagons—vehicles that have been tested from Maine to Texas in the hands of countless owners on level streets and cross-country roads, in every case return a verdict of efficiency.

White Trucks Save Economy of up-keep and economy of operation has been proven in so many cases there can no longer be a question of the real saving to be made for any customer who has sufficient hauling to be done. White trucks are more reliable than horses—not so liable to injury—not so likely to be laid up at the busy season, they are untiring, capable of being worked twenty-four hours a day if necessary and just as efficient the last hour as the first. These features make White trucks selling propositions—the kind that any dealer likes to push—the kind upon which he can stake his reputation. Why not follow the path of least resistance and sell the things the people want—White Motor Trucks.

Catalogues, testimonials and other literature gladly sent upon request.


The White Company

830 East 79th Street, Cleveland



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Features of the Truck Movement.

Almost since the automobile business amounted to the proverbial row of pins, its leaders, aware of the fickleness of fashion and other things, were prone to remark that the commercial car would prove the bulwark of the industry. But despite this oft-expressed opinion, the business vehicle received little, if any, serious attention at the hands of other than the manufacturers of electrics. The demand for pleasure cars and the accompanying profits were too great to be resisted.

During the last few years, however, the wagon and the truck gradually have been coming into their own; during the past twelve-month they almost have leaped into it, and the development has been not short of remarkable. In both strength and extent, in fact, the growth has been so rapid as to excite apprehension in some quarters that in "making up lost time," there may be danger of overdoing things, and that the overdoing may be attended by un-

pleasant results. With a large number of new commercials on the market, fear existed that many of them might prove of the "unbaked" or "half-baked" variety which are prone to leave a bad taste in the mouths and holes in the incomes of those who invest in them as aids to their respective businesses. For it is well recognized that while a man in the pursuit of pleasure may keep small account of costs, and care less, when an adaptation of the same vehicle figures unprofitably or too expensively on the books of his business, he is more than likely to assume a very different attitude.

Happily, however, most of those who are building commercial vehicles, even the newcomers, appear to realize that they must learn to crawl before they can walk, and that even in crawling there are some things to be considered if a given destination is to be reached. Few of them have undertaken to produce the larger and heavier trucks. They are limiting themselves to the lighter vehicles, and in doing so not many are attempting to make pleasure car chassis or pleasure car parts or fittings serve the racking demands of business. The wagons and trucks of the experienced makers all show the results of their experience; they are stronger and better in nearly every respect, and it is a good augury that the heavier types are being developed by the men most competent to do so—those who have progressed by gradual steps from one-ton vehicles to three-ton and so on upward. There are a few exceptions, but they merely are the exceptions that prove the rule. They are the makers who never have been stunted in either capital or equipment, and whose reputations are almost watchwords. There are not many of them, but they exist and are not difficult to recognize.

The commercial vehicle industry at last is fairly started. It finally is in a healthy, almost glowing state, but there is need for caution, nevertheless. More fortunes can be lost and more quickly than ever have been lost in the manufacture of pleasure cars. In the latter, usually a motor that "motes" is esteemed the chief requisite—and most engines nowadays are dependable—but in a commercial much more, very much more, is required, and dealing with a merchant and dealing with the same man in private life are two vastly different things, as the man who boldly leaps from the manufacture or sale of pleasure cars to

the manufacture or sale of business vehicles quickly will discover.

Progress of Electric Lighting.

Among the points of promise which the forthcoming show season holds out is a marked development in electric lighting facilities for the automobile. For several years the movement for electric lighting has been advancing steadily, but the particular direction in which progress will be revealed is in the improvement of generator systems, possibly in the introduction of one or two new ones.

Granting the advantages of electric lighting over other methods of illumination for motor vehicle use there still remains the problem of choosing between the storage battery and the generator as sources of current supply. The former has the merits of simplicity, low cost, freedom from moving parts and absolutely no exactions on the operator in the way of attention, save the occasional use of recharging. The generator system possesses the superior advantage of providing an inexhaustible supply of energy regardless of the rate of discharge and the duration of service, it is independent of charging stations and therefore is equally useful in town and country, it is free from the objection of stopping that some batteries possess and, while adding to the mechanism of the power plant, involves but a small number of parts and those of relatively simple construction. Hence, theoretically at least, its installation should entail little, if any, more labor upon the driver than the average well-made magneto.

This represents the ideal of the small lighting generator for car use, that its design involves a number of exceedingly trying electrical problems and that its production in perfectly acceptable form is not a matter to be achieved in a few weeks or months are understood. That it represents the ultimate solution of motor vehicle lighting for general use is an opinion to which many thinking men of the trade stand committed.

What is quite as important at the present time as the incidental questions involved in developing the lighting generator is the purely business question of gaining recognition of the system at the hands of automobile manufacturers in general. However successful any form of auxiliary or accessory apparatus may be, its market value, if not its salability, is considerably diminished by difficulties which stand in

the way of attaching it. Wherever possible it has been the custom of accessory manufacturers to provide specifically for the attachment of their products to different styles of car. This is a case where it is difficult to carry out the plan, however, as the proper mounting of the generator requires special provision for driving from the engine and, preferably, the casting of a suitable bracket on the engine base. Until car manufacturers reach a point where they are willing to make such provision, therefore, the introduction of the lighting generator will be somewhat impeded.

As to the importance of recognizing the new system, particularly on cars of the more pretentious class, one well-known man in the trade calls attention to the mounting of tire inflating pumps by one or two prominent car builders. But, he remarks, "the tire has to be blown up about once a month. Lamps have to be lighted every night, and, if you stop to think, it takes about as much time to light up five lamps as it does to pump up one tire."

In view of recent developments, the withdrawal of the New Jersey Automobile and

Motor Club, of Newark, from the Associated Automobile Clubs of New Jersey and the A. A. A. seems more logical than first appeared the case. It seems to have ceased to be an automobile club and become a political organization manipulated by professional politicians, whose "every little movement has a meaning of its own." There should be no room for professional political clubs in any non-partisan organization, and now that its nature has been made plain, the Newark club should change its name to "Murphy's Own," or something akin thereto.

COMING EVENTS

December 31-January 7, New York City—"Independent" automobile show in Grand Central Palace.

January 2-7, New York City—Importers' automobile show in Hotel Astor.

January 7-14, New York City—Association of Licensed Automobile Manufacturers' eleventh annual show in Madison Square Garden. Pleasure cars and accessories.

January 10, New York City.—Meeting of executive committee of American Automobile Association.

January 11, New York City.—Meeting of executive committee of National Association of Automobile Manufacturers.

January 11, New York City.—Meeting of the executive committee of the Association of Licensed Automobile Manufacturers.

January 11-12, New York City—Annual meeting of the Society of Automobile Engineers.

January 12, New York City.—Meeting of board of managers of the Association of Licensed Automobile Manufacturers.

January 13, New York City—Annual banquet of the Motor and Accessory Manufacturers at Waldorf-Astoria.

January 14-15, Los Angeles, Cal.—Race-meet on Los Angeles motordrome.

January 14-21, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's second annual show in the Auditorium.

January 14-28, Philadelphia, Pa.—Annual show of Philadelphia Licensed Automobile Dealers' Association in Third Regiment Armory.

January 16-21, New York City—Association of Licensed Automobile Manufacturers' eleventh annual show in Madison Square Garden. Second week devoted to commercial vehicles.

January 16-21, Detroit, Mich.—Detroit Automobile Dealers' Association's annual show in Wayne Pavilion.

January 17-18, Philadelphia, Pa.—Quaker City Motor Club's roadability run to Harrisburg, Pa., and return.

January 18, New York City—Annual banquet of the Automobile Trade Credit Association.

January 25-28, St. Paul, Minn.—First annual show of automobile dealers in Auditorium.

January 27-February 4, Vancouver, B. C.—First annual show.

January 28-February 4, Chicago, Ill.—National Association of Automobile Manufacturers' tenth annual national show in Coliseum. Pleasure cars and accessories only.

January 30-February 4, Troy, N. Y.—Troy Automobile Club's show in State armory.

February 6-11, Chicago, Ill.—National Association of Automobile Manufacturers' tenth national show in Coliseum. Pleasure and commercial cars, motorcycles and accessories.

February 6-11, Buffalo, N. Y.—Annual show.

February 13-18, Washington, D. C.—Second annual show in Convention hall.

February 13-18, Winnipeg, Canada.—Winnipeg Motor Trades Association's show.

February 14-18, Dayton, Ohio—Second annual show in Memorial building.

February 18-25, Binghamton, N. Y.—Annual show.

February 18-25, Minneapolis, Minn.—Minneapolis Automobile Show Association's annual show in National Guard Armory.

February 18-25, Newark, N. J.—New Jersey Automobile Exhibition Co.'s fourth annual show.

February 18-26, Brooklyn, N. Y.—First annual show of Brooklyn automobile dealers at 23d Regiment armory.

February 20, Cleveland, O.—Show in Central Armory.

February 20-25, Baltimore, Md.—Annual show in Fifth Regiment Armory.

February 20-25, Cincinnati, O.—Cincinnati

Automobile Dealers' Association's show in Music Hall.

February 20-25, Hartford, Conn.—Hartford Automobile Dealers' Association's fourth annual show in Foot Guard armory.

February 20-25, Omaha, Neb.—Third annual show of the Omaha Automobile Show Association in Auditorium.

February 24-27, New Orleans, La.—First annual show of New Orleans Automobile Club at Fair Grounds.

February 24-25, Keene, N. H.—Consolidated Motorcyclists' third annual motor-vehicle show.

February 25-27, New Orleans, La.—New Orleans Automobile Club's annual Mardi Gras race-meet on Fair Grounds track.

February 25-March 4, Toronto, Canada—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

March 11-18, Cleveland, O.—Manufacturers and Dealers' Association's show in Central Armory.

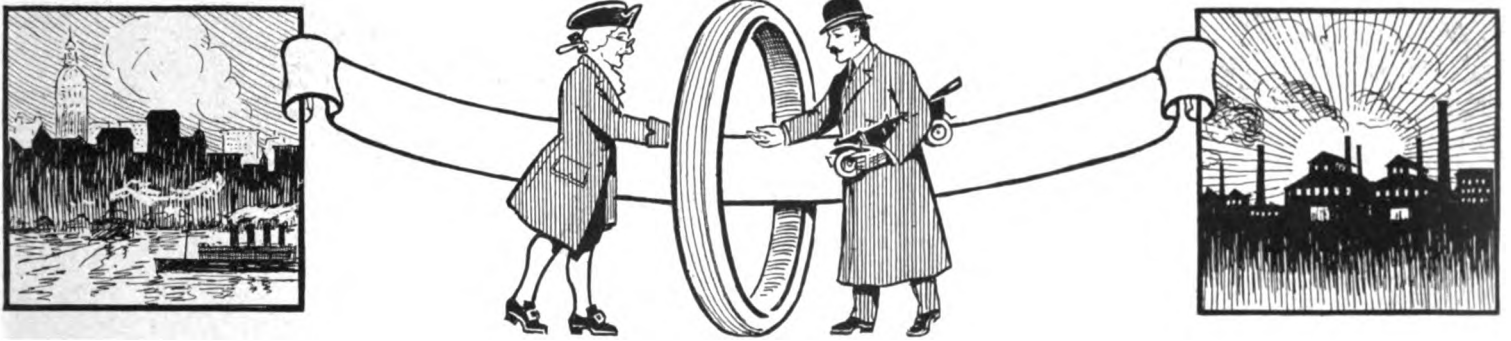
March 14-18, Denver, Colo.—Annual show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

April 1-8, Montreal, Can.—Annual show in Coliseum.

May 30, Indianapolis, Ind.—Five hundred miles international sweepstakes race.



Palace Show a Show of Striking Values

Despite the lack of accessory exhibits, the "independent" show in Grand Central Palace, New York, which was inaugurated on Saturday evening last, 31st ult., is very much of a show. In its dress of cream and crimson, it is pleasing to look upon, and there are motor cars and motor trucks aplenty in evidence. In all, there are 61 exhibits accounting for a total of 154 vehicles. At last year's show in the Palace, which was conducted by the American Motor Car Manufacturers' Association, 83 manufacturers exhibited 191 vehicles. The current function is the purely speculative venture of two gentlemen from Troy—the one in New York State—who, suggesting kinship that does not exist, style themselves the American Motor Car Manufacturers' Exhibit Association, and that they found willing ears and desire for such an exhibition, the number of manufacturers present is sufficient indication.

There is quite a display of aeroplanes, too; and they are very necessary. They help fill the great gaps that were left when the manufacturers of automobile accessories declined the show promoters' invitation to walk in, and they were secured for that purpose. A few outspread aeroplanes occupy lots of space, but there still remains no lack of elbow room. Nor are all the car manufacturers who contracted for space and whose names appeared on the advance lists to be found in the building. Several purposely are absent because of alleged misrepresentation of conditions, and they are to be sued for the amounts of their contracts. Several others were missing when the doors opened through no fault of their own. The Maytag-Mason cars, for instance, did not arrive until yesterday (Wednesday).

It largely is a show of Western vehicles. Of the 62 brands displayed, 42 are of Western manufacture. Some of them already have earned their plumes; almost as many are but just making their bids for fame and in boldly shying their castors into the New York ring, so to speak, they give evidence of the faith and spirit which characterize the Western country. In both Eastern and Western productions there is much of sterling worth. There are cars and trucks

which in design and detail and finish can hold up their hoods in any company; in several instances the wonder is that so much value can be given for so little money.

There are few, if any, so-called "show cars" displayed—cars of special design or ornate finish intended for exhibition purposes. About the nearest approach to anything of the sort are two cars that are distinguished not by their beauty or spick-and-span appearance, but by their mud and other stains of road travel. One is the Abbot-Detroit "Bulldog," which is engaged in rolling up a record of 100,000 miles, and which already is nearing the 25,000 mark; the other is the Warren-Detroit "Wolverine," which ploughed through the snow from Detroit to be present, and which, after the show, will press on to San Francisco. By way of contrast, there is a nifty little Krit runabout with side doors and under-slung frame that is finished in pure white; and there are three trim little coupes—a Bergdoll, a Paige-Detroit and an Abbott—that inside and out are as smart as they look, and are remarkably complete in their appointments; their prices are not the least attractive features of their equipages, which represent one of the most recent steps in the industry. Of other closed cars there are few. Of limousines there are but two, a Cunningham and a Velie, both of which, however, are well worth while. The Henry De Luxe, a roadster with lazy-back seats, a chauffeur's perch on the running board, and with drawers and other storage compartments in unusual places and a huge fuel tank behind the seats is one of the striking cars. A Lion, finished in fire-alarm red, and a Correja, in blue, are other eye-catchers. Although tire exhibits are conspicuous by their absence, the Goodyear people "scored one" by pipe-claying the tires of their manufacture which are fitted to cars on display and by accentuating the white effect thus obtained by gilding the brand name. In some instances the result is to make the tires more conspicuous than the cars themselves, to which they were applied.

Of the accessory department, the less

said the better. The small assortment of wares to be found is much mixed and widely scattered. It constitutes a sore point with the show management, and some of the exhibitors, who allege that the situation was not fully explained to them, are as sore as, if not sorer than, the management. One of the most interesting things the Motor World was able to discover was an attendant at one of the booths. Before the Motor World man managed to disclose his identity, the self-winding and frankly-spoken attendant enlarged on the article he was supposed to be selling.

"A Frenchman explained it to me, and I listened all right, but I couldn't understand it," he vouchsafed confidentially when pressed for information. "It's a fine thing, though," he continued, "but I guess people will look at \$200 a long time before they will give it up for this affair."

The aeroplane display is a thing apart. To "fill up," the exhibitors were given space without charge, as a show attaché disclosed during a heated moment, and they are making the most of it. The flying machines, however, are objects of curiosity more than anything else, and serve to interest the great green public, which, since the opening night, has not attended in any considerable numbers. That night was "paper night;" there was quite a crush, and it was apparent that most of the spectators, into whose hands the "complimentaries" had fallen, were more able to purchase goggles than cars or trucks. The music of the band—imported from Chicago—and of the human song birds—they are there; two of them—was to them more appealing than the cars. The band was strong on "Onward, Christian Soldiers" and, of course, "assisted" when Johnny Baxter and Miss Rena Aubrey—those are the names of the song-birds—offered up their selections. Although Boston never has been able to overcome its appetite for automobiles mixed with song, and Chicago only recently learned that serving vaudeville as an adjunct to its national show distracts interest and interferes with the transaction of business, this is the first time that a New York show has been so afflicted; and.



VIEW OF ONE-HALF OF THE EXHIBITS IN THE MAIN ROTUNDA OF THE PALACE SHOW

however it may increase the receipts of the box office, it distracts attention here exactly as it distracts it elsewhere. On Monday and Tuesday the weather was unfavorable, and slim crowds attended. On Wednesday, when the skies cleared, the at-

tendance picked up somewhat. As to the results of the show, opinion is divided. Some of the better-known exhibitors express themselves as being well satisfied; others express disappointment, while a third class declines to express an opinion until later

in the week, when, as they frankly stated, they expect to profit from the dealers who will arrive late in order to be able to visit both the Palace show and the licensed show in Madison Square Garden, which opens Saturday evening.

Characteristics of the Pleasure Cars in the Palace Show

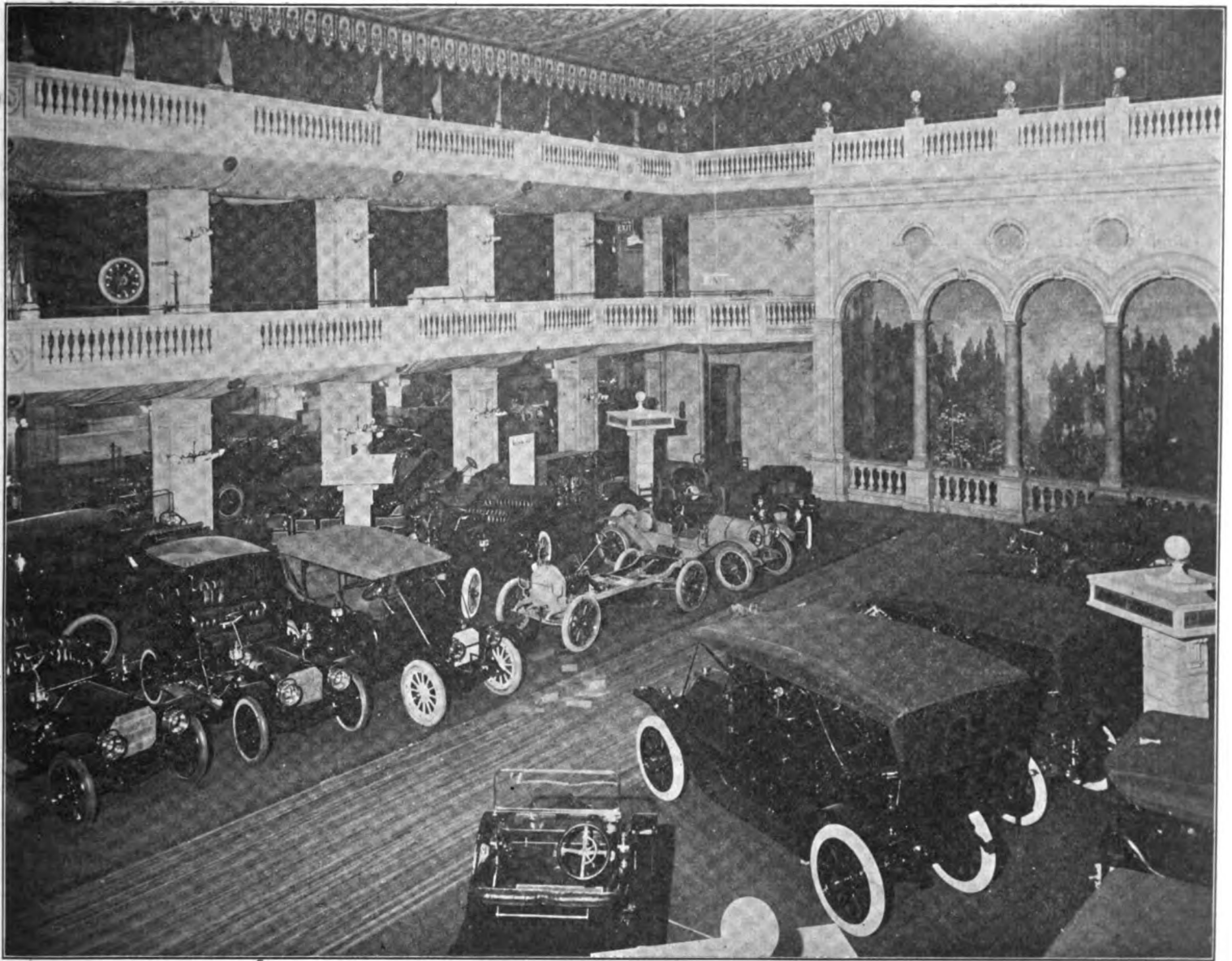
The assemblage of pleasure cars is noteworthy in several ways, but principally for the reason that it is composed mainly of products that have not before been exhibited at any of the New York shows; in fact, that are new in the sense of having been produced within 12 or 14 months. Another noteworthy point is the predominance of the price argument; big features and standard features prevail together with prices that range from the medium classification of \$1,500 to \$2,000 downward. In some instances the character of the machines, both in matters of appearance, speci-

fication, equipment and price, positively is astonishing, for the purchaser is offered many features that usually have been associated only with high-priced construction at an outlay that is most attractive.

Such points of recognized merit as unit power plants with block motors, thermosyphon cooling, dual or double ignition, three-point suspensions, multiple disk clutches, selective change gears and full-floating axles predominate. Therefore, it may be said that there is little individual novelty in construction, considering the show as a whole. The relatively small num-

ber of designs that are absolutely novel stand forth conspicuously, yielding that element of surprise which is necessary to satisfy the requirements of the curiosity seeker.

In the way of attracting attention the two exhibits of three-wheeled vehicles are most successful. The Motorette, which is manufactured by the C. W. Kelsey Mfg. Co., besides bristling with inventions, is claimed to express the first reliable solution of what hitherto has been the greatest difficulty of the three-wheeled vehicle constructor, that is to say, the tendency of



GENERAL VIEW OF MAIN ROTUNDA OF GRAND CENTRAL PALACE SHOW

the third wheel to run askew and finally to pull the frame hopelessly out of line. The Kelsey solution of the problem is effected by the aid of an "equalizer" on the front axle and a special system of frame bracing over the third wheel which is in the rear. The front equalizer consists of a shaft mounted transversely on the under part of the steel pan which constitutes the fore section of the body, the shaft being connected with the axle at each end by means of a pair of short links. The principle of the thing is that when the body is loaded on one side so that the adjacent spring tends to be compressed, its deflection causes the equalizing shaft to rock, the motion of the latter being communicated through the linkage at the opposite end to pull down the spring on that side also. So effective is the arrangement, it is claimed, that a full-grown man may stand on a five-foot board projecting to one side without causing the body to cant percept-

ibly. Other features of the Motorette are the pedal speed control and the power plant, which consists of an exceedingly compact two-cylinder, two-cycle opposed motor of 10 horsepower rating, which is arranged to fire simultaneously in both cylinders; and thermo-syphon cooling, the radiator being mounted in the rear behind the seat. The tri-car may be arranged for either passenger or parcels carrying purposes.

In the adjoining booth Richard B. Darre shows the Cyklonette, which is a German importation built by a company which is affiliated in its directorate with the directorate of the German Cable Co. The Cyklonette is of the single-wheel-in-front type. The motor is mounted over the front wheel and drives it through a planetary gear reduction and chain. Steering is accomplished by means of a rigid tiller upon which are mounted the control devices and also the engine oiler. In a way the arrangement may be said to constitute a single lever control,

inasmuch as the high-speed clutch and low-speed gear are manipulated by twisting the handle on the end of the tiller, while the spark, throttle and air regulation of the motor is accomplished by means of three small levers also carried on the tiller. The motor is of two-cylinder form, rated at six horsepower capacity, and may be equipped with either magneto or battery forms of ignition. The carburetter employed is of the surface type, and occupies the entire fore peak of the triangular body structure. The latter is a tubular framework with pressed-sheet steel surfaces.

The Only car, which is the only car of its sort shown, and which in its title and distinguishment is said to apply in more than one respect, represents an idea borrowed from France and brought here from France by a Frenchman. It is a long and very low car with wheels only 29 inches in diameter, and wheelbase only 105; the

hood is only about half as long as the entire machine, and a flare or cowl only 30 inches long extends back over the dash. Directly over the rear axle is the seat, behind which is a gasoline tank. Although the hood itself is over four feet long, the motor which it encloses consists of but one cylinder, and it is explained facetiously to the inquisitive visitor that "the other seven cylinders" which he is led to expect to find "are on the rear axle." The Only engine cylinder is $5\frac{1}{2} \times 10$ inches, bore and stroke, vertical, water cooled, with magneto in front, carburetter on the right and exhaust on the left. The carburetter is a special multiple jet design, with three jets, one for low, one for intermediate and one for high speeds, of course. The throttle controls the air, gasoline and gas openings simultaneously, and the device is said to be not without points of considerable promise. The clutch is of the cone type, the transmission three-speed selective and shaft drive to rear axle is employed. All springs are semi-elliptic. The Only guarantee, which is a feature in itself, commits the product to a speed of 60 miles per hour, a fuel consumption of 30 miles per gallon, and an entire absence of repair bills for one whole year.

In addition to the striking coupe model, the Abbott-Detroit exhibit is distinguished by a very neat adaptation of the demountable tonneau effect to a roadster. The chassis is the same as that used for the coupe. The fore part of the body is of the closed-front pattern, ventilated and with its simple control, the levers being placed inside the body, while the clutch and service brake are operated by a single pedal, is decidedly effective. The Abbott Motor Co.'s general construction includes the exhaust-valve-in-the-head type of motor, with cylinders cast in pairs and of $4 \times 4\frac{1}{2}$ -inch dimensions; selective change gear with multiple disk clutch enclosed in the same housing, and Timken roller bearing front and rear axles. A sample of the five-passenger touring model also is shown.

Although attention at the exhibit of Paige-Detroits shown by the Paige-Detroit Motor Car Co., centers around a striking little coupe tastefully upholstered with leather and brilliantly illuminated by electric lights, the four-cycle, four-cylinder power plant with which it is equipped and which the manufacturers have adopted for their 1910 output constitutes a more important feature. The adoption of this new engine, however, does not mean that the two-cycle, three-cylinder motor which previously distinguished the Paige-Detroit is to be discontinued, as such is not the case; it will be offered as an option, and the Paige-Detroit people thus will enjoy the distinction of being, perhaps, the only manufacturers to give purchasers their choice of a two-cycle or a four-cycle motor. The

new power plant is of unit construction, with the cylinders cast en bloc and the valves all on the same side. Selective sliding transmission is used with three speeds forward and reverse. The clutch is of the multiple disk type, and runs in an oil bath. A Bosch high-tension magneto generates current for ignition. Contrary to the usual practice, the doors on the coupe open from

CENSUS OF THE SHOW.	
Total Exhibitors	94
Exhibitors of Cars	61
Exhibitors of Accessories	33
PLEASURE CARS.	
Gasolene:	
One Cylinder	1
Two Cylinder	6
Four Cylinder	88
Six Cylinder	4
Total Pleasure Cars	99
Landaulet	2
Touring (open)	28
Touring (closed)	30
Brougham	2
Runabout	26
Roadster	4
Coupe	4
Town Car	1
Limousine	2
99	
Water Cooled Cars	96
Air Cooled Cars	3
CHASSIS.	
Two Cylinder	2
Four Cylinder	16
18	
COMMERCIAL CARS.	
Gasolene:	
Two Cylinder	24
Three Cylinder (2 cycle) ..	4
Four Cylinder	25
Total Gasolene	53
Electric	1
Total Commercial Cars	54
Commercial Chassis:	
Two Cylinder	5
Three Cylinder (2 cycle) ..	2
Four Cylinder	6
13	
Air Cooled Commercial	9
Water Cooled Commercial ..	44
Total Gasolene Vehicles	153
Total Electric Vehicles	1
Total All Vehicles	154

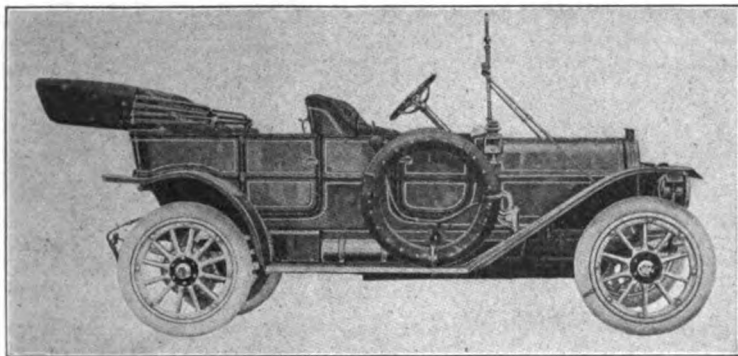
the front, forward, and there is plenty room for the driver to enter or leave by the right-hand door. The equipment includes electric lights all around. Two regular type roadsters also are shown, as is a four-passenger touring car in which the two rear seats are removable, leaving ample space for the carrying of luggage or commercial matter.

Three models and a "Little Six" motor are shown by the McFarlan Motor Car Co., whose product is confined to six-cylinder cars. The complete vehicles on view are

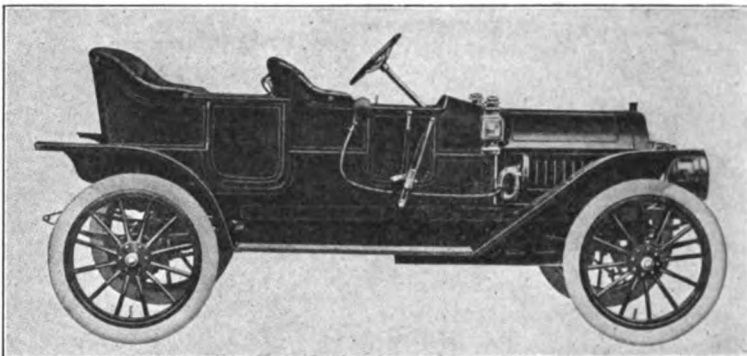
of the "Little Six" type, and include two-passenger roadster, five-passenger closed-front touring car and a torpedo. The motor with which all are equipped develops 35-40 horsepower. It is of the valve-in-the-head type, with cylinders $3\frac{3}{8} \times 4$ inches, cast in pairs. The "Big Six" 50-60 horsepower models, which complete the line, are not shown. The roadster is very strikingly finished in dark blue and possesses several points of individuality such as the arrangement of control levers whereby the gear shifter is brought up under and inside the front door; the large copper gasoline tank and the touring trunk equipment also are features. The power plant has a three-point suspension, the clutch is of the multiple disk type, the transmission three-speed selective, and ignition is by the dual system with high-tension magneto. Springs, semi-elliptic and full-scroll head elliptic are used in front and rear respectively. Option is given in the size of wheels, 32, 34 or 36×4 -inch front and rear. The wheel-base is 128 inches for each of the models shown.

Very attractively fitted with front doors and slightly larger and of more generous proportions than the five-passenger "30-35" is the H. H. Babcock Co.'s new 40 horsepower model, which is of the same seating capacity and sells for \$3,000. Ventilators are provided on each side of the dash for the circulation of air in warm weather, after the approved fashion of the moment. Two removable seats are furnished for the tonneau for use in case of necessity. The motor has four cylinders of $4\frac{1}{2} \times 5$ inches dimensions, and is equipped with the Bosch dual system of ignition; the transmission is three-speed selective. The wheels are large, $36 \times 4\frac{1}{2}$ all around. Besides the new "40" car, a stripped "40" chassis is shown, also the "30" five-passenger touring car.

With the distinction of being the smallest cars exhibited, Metz runabouts, shown by the Metz Co., attract attention by their evident adaptability to a number of uses. Simplicity is the keynote of these little cars, and is illustrated throughout their construction from the two-cylinder, air-cooled motor to the simplest of transmission—the friction drive. The cylinders of the motor, which are opposed and offset measure 3.5×3.3 inches, and the motor is rated at 12 horsepower. Final drive is by double chains, the brakes of the multiple disk type being placed in the rear-wheel hubs. Two pedals control the car, one being attached to the driving friction disk to permit of disconnection between the engine and the drive wheels, and the other operates the brakes. Speed changes are obtained with a side-hand lever. Bodies are built to accommodate two passengers, and regular equipment includes a folding top and Bosch magneto ignition. The same chassis may be



VELIE 5-PASSENGER CLOSED-FRONT TOURING CAR



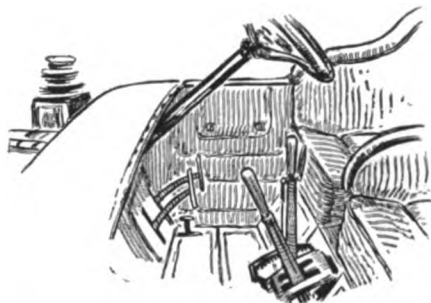
PATERSON CLOSED-FRONT TOURING CAR

converted to a commercial car by the substitution of the Metz special delivery package car body.

Four models are shown by the Michigan Buggy Co., the most striking feature of the exhibit being a torpedo model in which the body is somewhat roomier than usually is the case. The gear-shifting levers are placed inside and electric lights are provided throughout. The motor is the same as is used in all of the other models except one, and has four cylinders $4 \times 4\frac{1}{2}$ inches. Three-speed selective transmission sets are with the motors, mounted on a sub-frame, the necessary flexibility being gained through the use of a double universal joint between the motor and the gear box. In the model B cars a Continental 36 horsepower unit power plant is used, and is suspended at three points. This model is slightly larger than the others, the wheelbase being 112 inches and the frame length 140 inches, this feature, long frames on comparatively short wheelbase, being distinctive of all the Michigan cars. The engines in all models are hung low, and the bodies are lighter in weight than is usual for their sizes.

Otto cars in three body styles are displayed by the Otto Motor Car Co. and include one closed-front touring car, one small tonneau, closed-front touring car, and one runabout. Among several changes in the construction of the line may be mentioned the adoption of full-floating rear axles on R. I. V. bearings. The transmission and differential cases, which are in

one piece on the axle, are now made of phosphor bronze. Brake sizes have been increased slightly, the spokes in the rear wheels are now "bossed," and the universal joints are encased. The small tonneau, closed-front touring car is controlled from the right side as are the other models, but the gear shift and emergency brake levers, which are short and set at an angle, are placed at the left side of the driver. Thus he may leave or enter the car from the



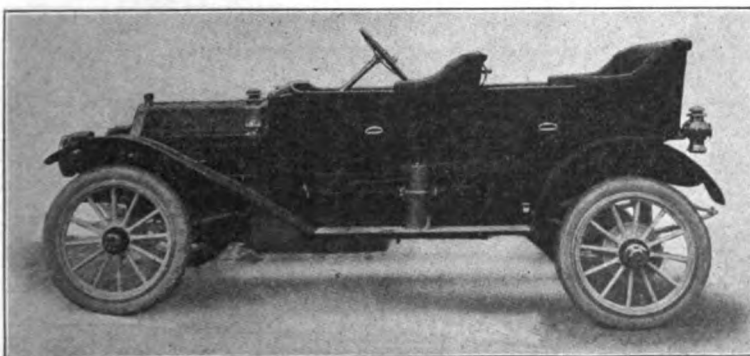
ARRANGEMENT OF OTTO CONTROL LEVERS

right side, while the shape and position of the levers is such that the use of the left side in getting in or out is accompanied by no inconvenience.

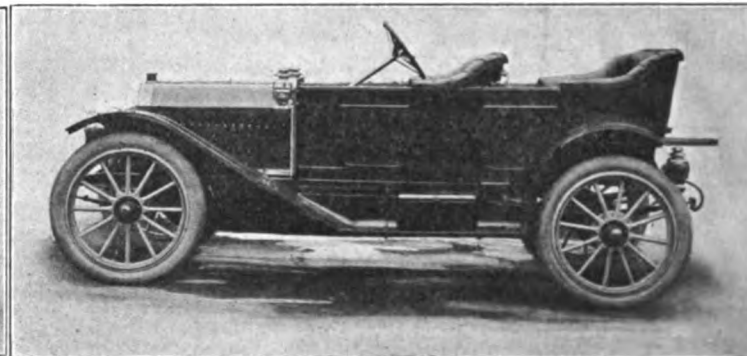
All brand-new and shown for the first time at any show are the four and five-passenger touring cars made by the Alpena Motor Car Co., of Alpena, Mich., selling for \$1,450 and \$1,600 respectively. The five-passenger car is of shapely design, with its straight lines and slightly convex sides, and altogether the neat front doors and shrouds tend to make it appear almost

diminutive, nevertheless, the car is very spacious both in front and in the tonneau. Two other models, a standard five-passenger touring car and a torpedo roadster, are shown. All three chassis are of identical construction. The motor is a four-cylinder, $4 \times 4\frac{1}{2}$ model, with its cylinders cast in pairs, and develops 33.6 brake horsepower. The motor, multiple disk clutch and three-speed selective transmission are in one unit and all enclosed in an aluminum casing. The propeller shaft drives normally at an angle of but 2 per cent., and but one universal joint is used. The three joints by which the power plant is suspended are trunnions; one at the front, resting on the front cross member of the frame, and two at the rear, resting on bearings secured to the side members. A full-floating and full ball-bearing type of rear axle is used on all models. The front springs are semi-elliptic and the rear form a $\frac{1}{4}$ platform. All wheels are 34×4 inches. One pedal operates both the clutch and service brakes. Another rather good feature is a neat arrangement of the cut-out and accelerator pedals, which makes it possible to operate both simultaneously if it be desired to do so.

Of eye-catching proportions the car made by the Correja Motor Car Co., with its clean-cut but "chunky" body, is shown in two-passenger roadster form. No accessories are carried in view except the lamps, of which those on the side are mounted on the high cowl dash and, together with the tail lamps, lighted by electricity. The gasoline tank is carried in the rear, concealed under a rounded housing which extends



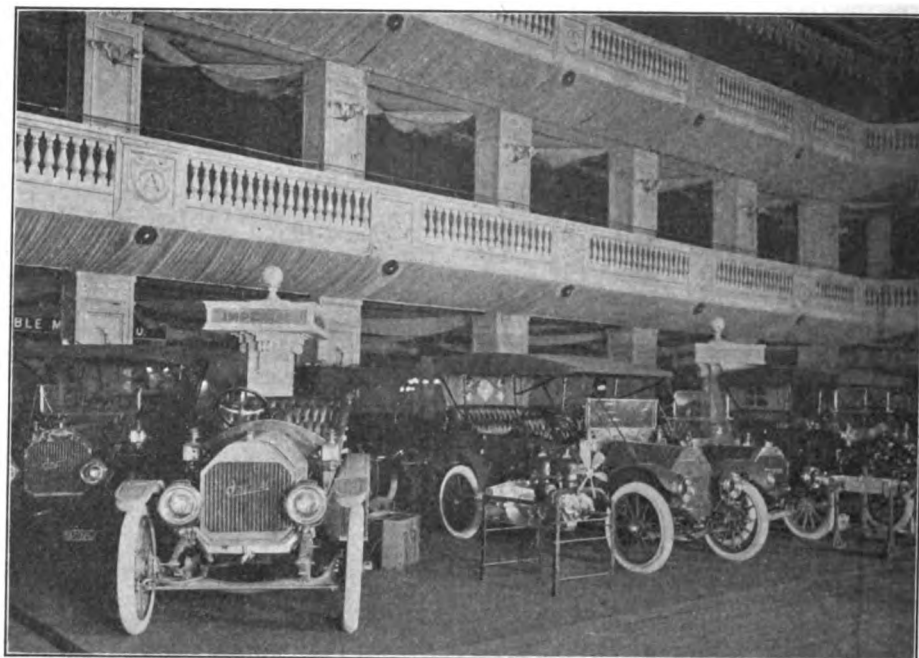
CRAWFORD CLOSED-FRONT TOURING CAR



WARREN-DETROIT CLOSED-FRONT TOURING CAR

downward from the top of the seats. This model is a new one, needless to explain, while front doors have been added to the standard bodies this year. The most radical change in the chassis has been the substitution of an "L" head motor by one of the "T" head types, and an increase in size of the valves from $1\frac{1}{8}$ to $2\frac{1}{4}$ inches. The bore is enlarged from $4\frac{1}{8}$ to $4\frac{1}{4}$ inches, and the stroke decreased from $5\frac{1}{4}$ to 5 inches. A centrifugal water pump takes the place of the rotary formerly used, a semi-floating axle is employed instead of a full-floating, and the brakes are not internal expanding and external contracting, but are both of the internal expanding pattern.

Exterior features of the new 40 horsepower, five-passenger, closed-front touring car manufactured by the Lexington Motor Car Co., are its long, straight line appearance, rakish steering column and graceful fenders. The motor is an "L" type, four-cylinder, of $4\frac{1}{2} \times 5$ inches dimensions, with cylinders cast singly and with a five-bearing crankshaft. A double ignition system with Bosch magneto is used. The transmission is a three-speed selective type. Semi-elliptic springs are used in front and $\frac{3}{4}$ -elliptic in the rear, and the wheels are 34×4 inches, with a wheelbase of 120 inches. A striking form of torpedo roadster also is exhibited, finished in light brown with a white stripe edged with black. There is but one door—on the left—and the low-tilted seats are upholstered in light brown leather to match the body finish. The oval gasoline tank in the rear has a capacity of 35 gallons. The transmission is a three-speed selective; the rear axle



THE DISPLAY OF IMPERIAL CARS

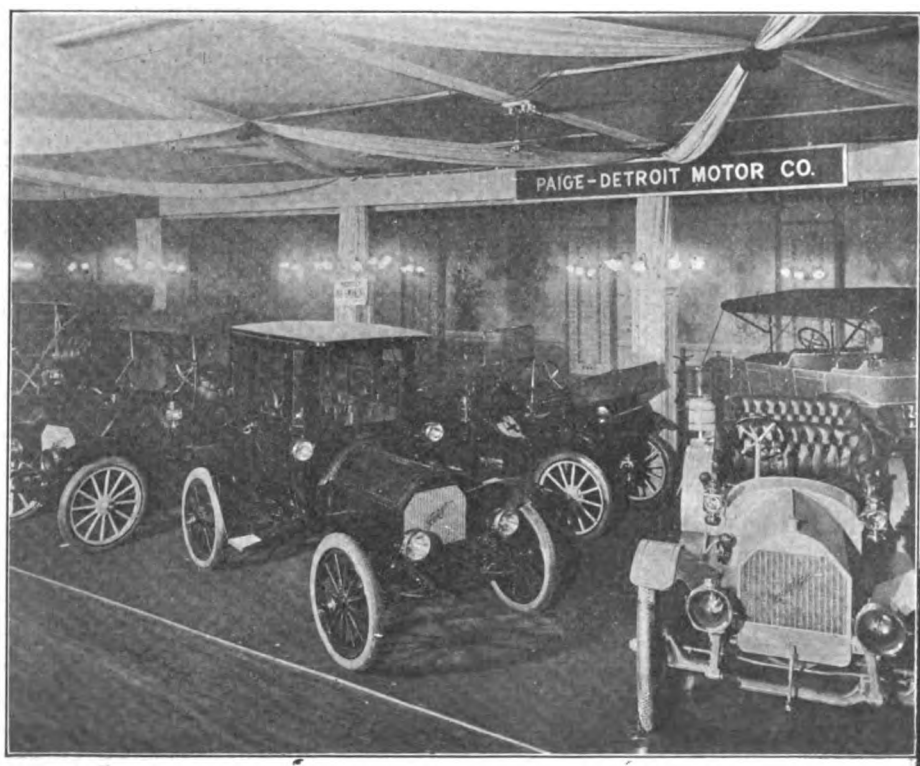
is of the semi-floating type; the wheels are 34 inches in diameter, shod with $3\frac{1}{2}$ -inch tires, and the wheelbase is 117 inches.

Although the regular models are continued practically unaltered, a new type has been added to the product of the Crawford Automobile Co. in the form of a five-passenger, closed-front touring car. The newcomer is equipped with a four-cylinder, 35 horsepower Crawford motor, introduced for the first time this season. The body is of straight-line design, with the control

levers arranged inside. A full-floating axle is used on this model, and replaces the semi-floating which is used on the other cars. The tires are $34 \times 3\frac{1}{2}$ inches in front and 34×4 inches in the rear, and the wheelbase is 120 inches. The 30 horsepower touring car shown is equipped with a Continental motor as heretofore, the only change in the design being the use of larger wheels and tires, the new size being $34 \times 3\frac{1}{2}$ inches.

Public service cabs may be seen at the exhibit of the Houppt-Rockwell products, which is staged by the Harry S. Houppt Co., one taxicab and a town car being shown. A distinctive and valuable advantage is that the motor and transmission are constructed on the interchangeable plan. The motor is a four-cylinder type, cast en bloc, with cylinder dimensions of $3\frac{5}{8} \times 4\frac{1}{8}$ inches. All working parts are on the right-hand side. Driving is done from the left side, with control levers on the driver's right, in the center of the car. The throttle is operated by a foot pedal, and the spark timing is fixed. A Houppt-Rockwell touring car also is exhibited, but practically no changes are made in the car except for slight refinements in design.

The exhibit of the Warren Motor Car Co. includes among others a brand new and uncatalogued model of the two-passenger roadster type which, at \$1,300, is one of the most attractive offerings in its class which the show affords. It is a modification of the so-called model D-11, with side doors, equipped as are the torpedo and closed-front models this year, with electric lights as standard equipment; a touring trunk and a full quota of accessories. It also reveals the refinement of cast aluminum floor boards instead of wooden ones. Eight dif-



PAIGE-DETROIT EXHIBIT, SHOWING THE NEW COUPE



COLE CARS CENTERED IN THE MAIN ROTUNDA

ferent styles comprise the Warren line at present, instead of three as heretofore, and in adopting the larger bodies, which now prevail, a number of changes have been adopted in the chassis. The transmission is of larger size than formerly, and is of new design throughout; the brake drums have been increased from 10 to 14 inches in diameter, and a neat equalizing device adopted; the springs, which are semi-elliptic in front and three-quarter elliptic in the rear, are wider and have an additional leaf; and the standard tire sizes have been increased to the rather unusual 35 x 4-inch dimensions. The 30 horsepower motor is of the popular block type with valves all on one side, and is equipped with double ignition, the Bosch magneto being standard.

The rangy and rather pretentious looking closed-front Paterson car, which is shown at one end of the exhibit of the W. A. Paterson Co., is an addition to the line this year. It is of 36-40 horsepower rating, the dimensions of its four-cylinder motor being $4\frac{1}{4} \times 4\frac{1}{2}$ inches, bore and stroke. Its general characteristics are those of the entire line, however, which is to say that it is equipped with the unit type of power plant, with cylinders cast in pairs with the valves and manifolds on the left and the magneto and water pump mounted on the right. The 30 horsepower models, two-passenger roadster and closed-front touring car, are retained in practically unaltered form, and are well equipped in the matter of accessories.

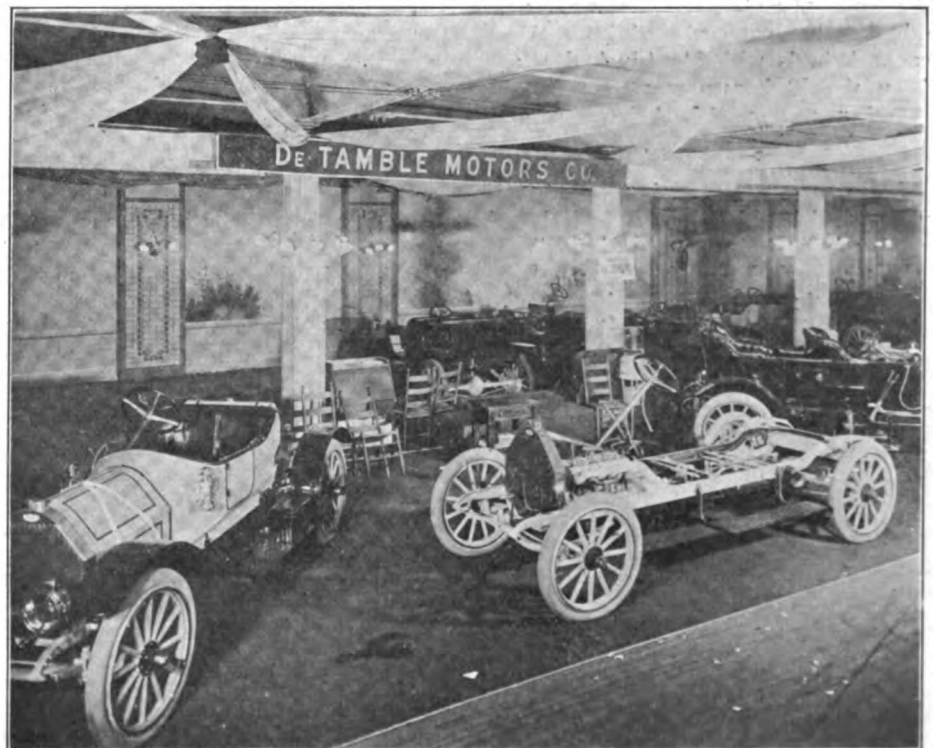
So that the man who cannot afford to own two cars still may have the advantages of both pleasure and commercial types, the Gaylord Motor Car Co. has produced the utility model which is the only car ex-

hibited. It is of unusual appearance to the extent that the body, which is of the open tray form, is extended well back of the rear axle. In its standard passenger arrangement it carries two seats of the surrey type. The rear one is demountable, however, and when it is removed the body affords ample space for haulage of merchandise up to 1,200 pounds in weight. If desired, a third seat may be added, thus increasing the passenger capacity to six or eight. The motor is of the four-cylinder vertical, valve-in-the-head type, the multiple

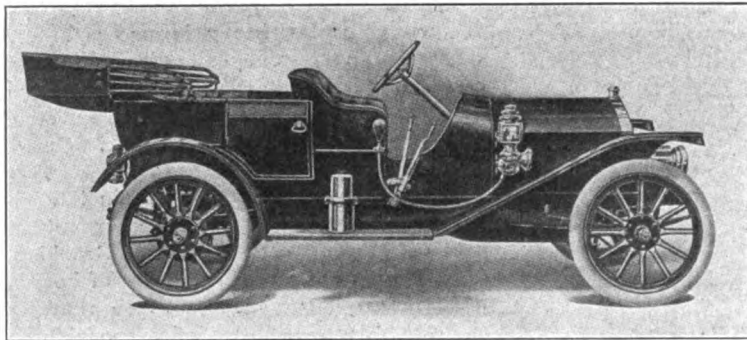
disk clutch and a heavy bronze yoke for supporting the front end of the torsion tube being included in the power unit which is suspended on three points. The selective gear is mounted on the rear axle.

The Clark car, which is built in Shelbyville, Ind., is staged by its metropolitan agent, the Clark-Norwalk Co., of Brooklyn, and is displayed with three styles of bodies, namely, a two-passenger torpedo roadster and two five-passenger touring models, the latter two being alike in body but with different types of motor. The roadster is of racy construction, with front doors, deep scuttle dash and an oval gasoline tank and a trunk behind the low seats. An "L" head, four-cylinder motor of 30 horsepower, with a five-bearing crankshaft furnishes power for this, and one of the touring models. The clutch is of the cone type, and the transmission, a three-speed selective. The other touring model is equipped with a 30 horsepower motor, which is cast "en bloc" instead of separately. All models have wheels $34 \times 3\frac{1}{2}$ and a wheelbase of 114 inches.

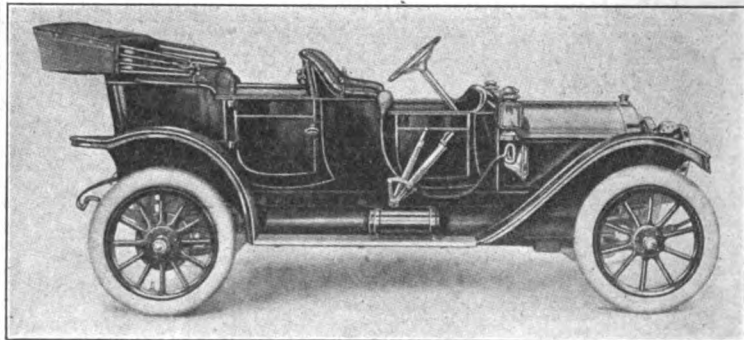
Another one of the several newcomers is that made by the Scioto Auto Car Co., and called, somewhat enigmatically, the Arbenz. The exhibit arrived in two sections of one car each, the second being considerably delayed. On arrival it proved to be a neat \$1,700 offering in five-passenger open touring form. The first model on the scene was a four-passenger, front-door touring car, also selling for \$1,700. This machine has an attractively fitted cowl dash and is of effective straight-line design. But one chassis is used for both types, and



DE TANGLES DISPLAYED TO GOOD ADVANTAGE



ALPENA FLYER FROM MICHIGAN



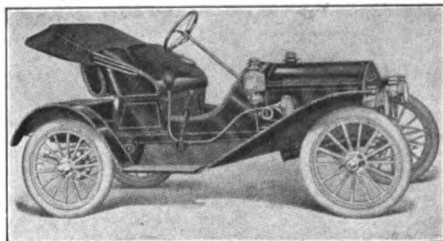
BABCOCK "FAMILY" TOURING CAR

it is equipped with a four-cylinder, 40 horsepower engine, with cylinders of $4\frac{1}{4} \times 5\frac{1}{4}$ -inches bore and stroke, cast in pairs. A cone clutch and three-speed selective transmission are used. A two-passenger roadster also is made which sells for \$1,675.

One of the most striking displays is that of the Imperial Auto Co., on the main floor, where five models are staged, four of them being entirely new. The latter comprise a five-passenger, front-door touring car; a semi-torpedo, five-passenger car; a two-passenger roadster, all equipped with a 40 horsepower motor with cylinders of $4\frac{1}{2} \times 4\frac{1}{2}$ inches dimensions. The new 50 horsepower roadster with detachable tonneau has a motor with cylinders $5 \times 5\frac{1}{4}$ inches. The 30 horsepower, five-passenger touring car is continued with only slight changes, which are in the nature of refinements. All models have a three-speed selective transmission. On the 40 horsepower, five-passenger touring and the 50 horsepower small tonneau, full-elliptic springs are used all around, while the other models have semi-elliptics in front and $\frac{3}{4}$ -elliptics in the rear. The brakes are external and internal on all cars. Wheels with 34×4 -inch tires are used on the 50 horsepower tonneau, the three other new models being equipped with $34 \times 3\frac{1}{2}$ -inch tires.

A four-passenger, straight-line, closed-front "vestibule" with deep scuttle dash and long, racy lines and an open Norwalk 35 are the types of the Ohio company from the town of that name shown by the distributors, the Clark-Norwalk Co. There also is shown a stripped chassis which

reveals the several interesting features of these models. Its specific point of originality is the three-point suspended sub-frame for motor and transmission mounting. The sub-frame is rigid at two forward points on either side of the frame just behind the radiator, but has a bearing five inches in diameter at the rear end which is supported by a cross member of the main frame. This construction prevents any strain from being communicated to the motor or transmission from the main frame when the machine is racked or twisted, and is of much the same effect as



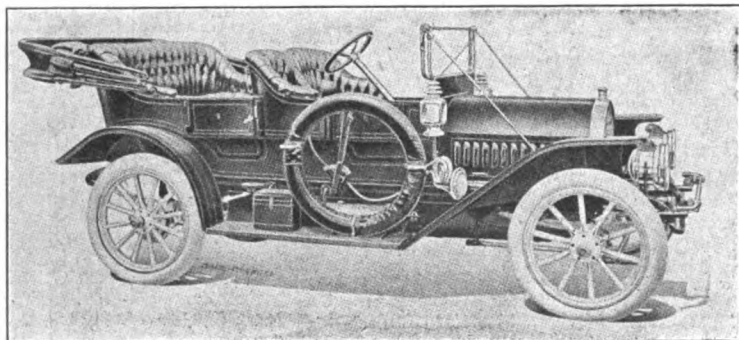
METZ RUNABOUT

the unit type of power plant. The motor is a four-cylinder structure, 4×5 inches, having its cylinders cast separately, with offset crankshaft mounted on five main bearings. The exhaust valves are in the head and the inlets in the side. A dual system of ignition with Remy magneto is used. Transmission is by cone clutch, three-speed selective transmission and torsion tube construction. The pressure feed fuel is carried in the rear under the frame. As a final argument it is claimed that the rear of the car is absolutely dustless, this distinctive advantage being ascribed to the

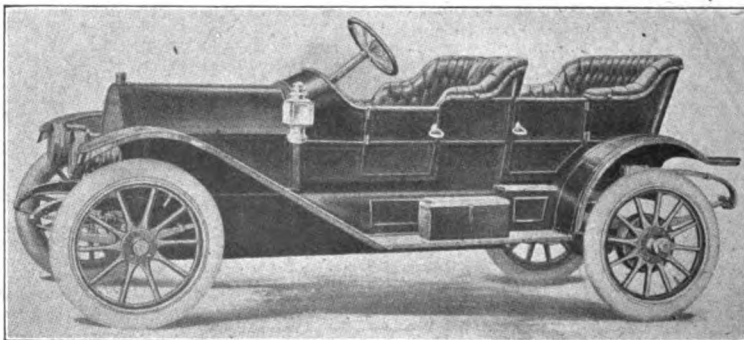
use of a fan in front which forces air through the dust pan and out the rear, the pan being longer than usual and having curved sides that contribute a blower effect. The wheels are $36 \times 3\frac{1}{2}$ inches and the wheelbase 117 inches.

A brand-new car of the medium sized type is the Penn "Thirty," which the Penn Motor Car Co. exhibits in roadster and small tonneau form. The roadster, with or without the scuttle dash, is what the budding chauffeur would be apt to characterize picturesquely as "a snappy looking outfit." Its four-cylinder, 30 horsepower motor is the Renault type, with its cylinders cast en bloc, and with 32-inch wheels and 105-inch wheelbase. A cylindrical gasoline tank is carried behind the seat. The four-passenger small tonneau is built upon the same chassis, is hung low and has a scuttle dash. A selective three-speed transmission is located in an aluminum case beneath the floor boards. The clutch is of the cone type, the springs semi and three-quarter elliptic, front and rear respectively.

While the present tendency in this industry as far as prices go commonly is supposed to be in the direction of downward revision, the Washington, manufactured by the Carter Motor Car Corporation, Washington, D. C., is distinguished by a reversal of that plan, and has been increased in price from \$1,700 to \$2,250. However, the new price seems justifiable because of various improvements in the newer models. These changes include an increase in wheel base to 118 inches; an increase in



WASHINGTON "40" TOURING CAR



HENRY "40" TOURING CAR

tire specifications to 36 x 4 inches, and a substantial increase in spring dimensions. A general reinforcement of the chassis, in other words, and a slight enlargement as well. In the way of detailed alterations the enclosing torque tube method of driving shaft construction has been adopted in preference to the double-jointed shaft and torque bar construction formerly used; internal expanding brakes are employed exclusively, while the new style carburetter is so arranged that the needle valve may be adjusted while the car is running, by a neat lever on the dash. The latest specifications, it may be added, call for the Bosch dual system of ignition. The model on view is the new seven-passenger touring car which is of the prevailing closed-front pattern, and which is equipped with a 40 horsepower quadruple motor of $4\frac{1}{8} \times 5\frac{1}{4}$ inches, bore and stroke, which has its cylinders arranged in pairs.

Ranging in price from \$1,600 to \$3,100, the cars made by Johnson Service Co. allow rather a wide variation in type. Three of the models are shown, a 30 horsepower, five-passenger at \$1,600; a 40 horsepower, five-passenger at \$2,500, and a 50 horsepower, seven-passenger at \$3,100; the appellation "Johnson Silent" being applied to the line. The "30" is an open car with curved fenders and aprons, and is equipped with a $4\frac{1}{4} \times 4\frac{1}{2}$ -inch motor. The "40" also is an open touring model with practically the same type of chassis, except that its motor is of $4\frac{1}{2} \times 5\frac{1}{4}$ -inch dimensions. Semi-elliptical springs instead of semi and $\frac{3}{4}$ -elliptical, and tires 34 x 4 inches instead of 34 x $3\frac{1}{2}$ inches are other points of difference. The fenders are not curved over in front or rear, but extend out straight. Considerably larger both in power and size than the other two models, the seven-passenger car is fitted with a motor of $5 \times 5\frac{1}{2}$ -inch cylinder dimensions, developing 50 horsepower. The body is very attractive with its front doors, and the accommodations are ample for seven. Its long-wheel base and large wheels render it particularly striking. A feature of its equipment, which is distinctly novel, is the setting of electric side lamps in the dashboard, with their lenses flush with the surface. The chassis details are similar to those of the smaller cars in that the same type of clutch, transmission and other mechanical parts are used. It varies only in respect to the use of semi-elliptic springs, wheelbase and tires. The latter, by the way, are 36 x $4\frac{1}{2}$ inches all around, while the base is no less than 124 inches.

Just by way of showing how much excess baggage may be carried on a two-passenger runabout without crowding the passengers, the Henry Motor Car Co. is exhibiting a model de luxe which is all that its name implies or sounds as if it implied. The individual seats of the "Morris

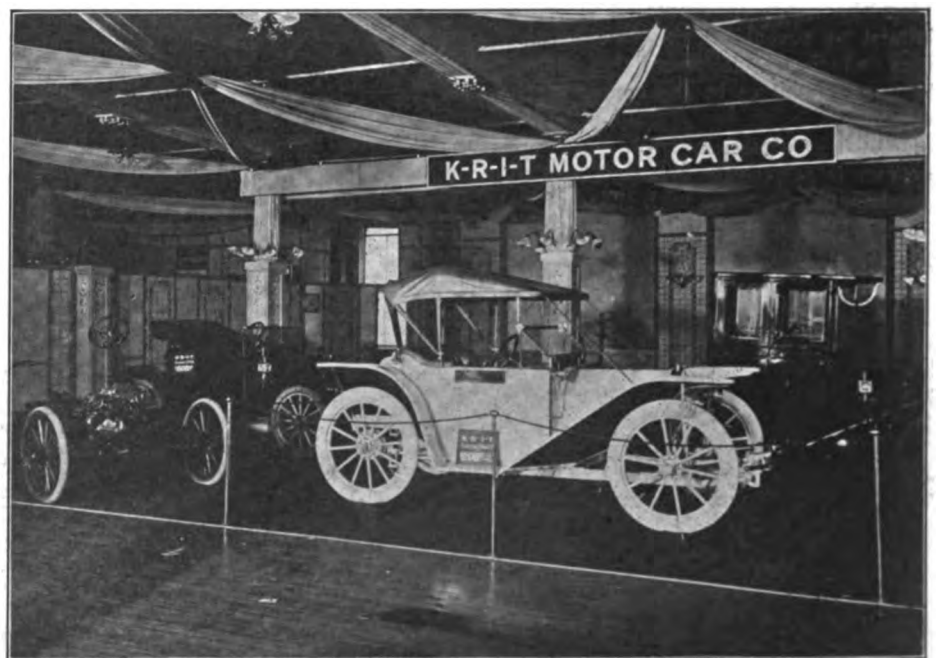


McFARLAN EXHIBIT SHOWING THE "LITTLE SIX" ROADSTER

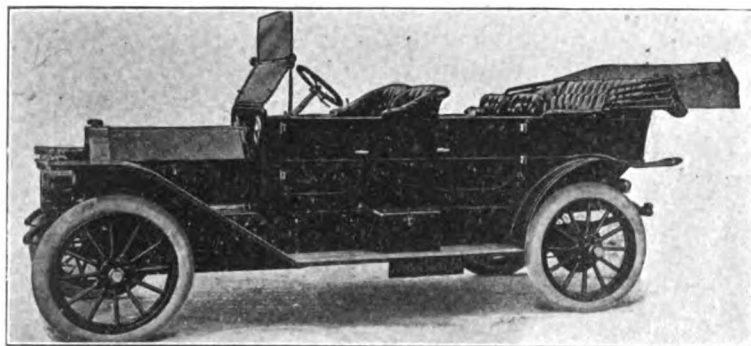
chair" type are set with just sufficient backward tilt to make their high backs suggest the rest and peace of the firesides; the spirit of peace and plenty is further suggested by the huge tanks behind the seats and the big touring trunk in the rear under the spare tire rack. But it by no means follows that the car is limited in its luggage capacity to the trunk. The running board on the right side is completely taken up by a flattened-out chiffonier, the drawers of which are sufficiently numerous to afford room for a most complicated tool equipment, while further storage space is discoverable in a cupboard under the chauffeur's seat on the left running board, and also in the forward bulkhead, which is back of the engine compartment and in front

of the false dash. The machine is finished strikingly in light maroon and gray.

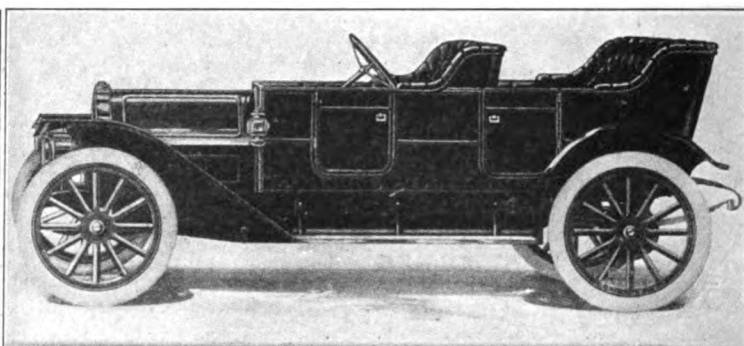
The standard types of Henry car also shown, while less out of the ordinary, are distinctly substantial in appearance, and give evidence of careful forethought in assembling. The 40 horsepower model, a chassis of which is shown in stripped form, has a standard pattern of four-cylinder vertical motor, which, together with the selective change gear, is mounted on a sub-frame. The propeller shaft is enclosed in a substantial torque tube which joins the rear axle in a massive globular differential housing. A striking feature is the array of the new \$900 roadster, which is equipped with a block type of motor, rated at 24 horsepower, and which is both neat and



THE FEATURE OF THE KRIT EXHIBIT—THE UNDERSLUNG ROADSTER



JOHNSON SILENT 50 CLOSED FRONT TOURING CAR



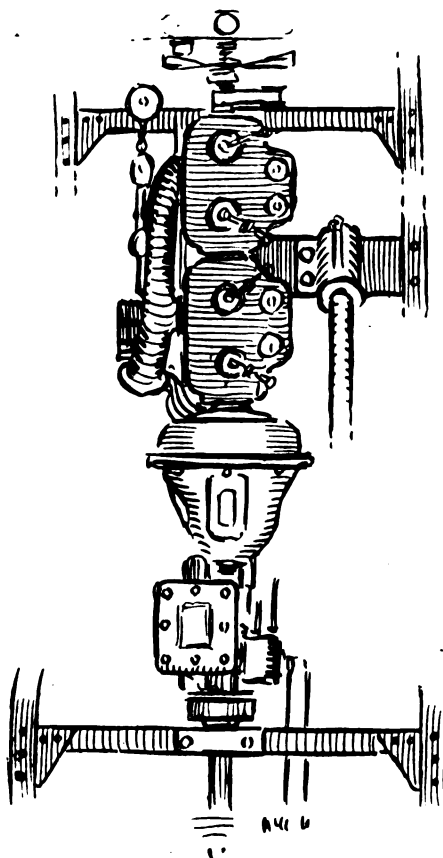
DE TAMBLE FIVE PASSENGER CLOSED FRONT TOURING CAR

compact and quite an impressive car at the price.

Rather an unusual version of the three-point suspension idea is developed in the Lion, which the Lion Motor Car Co. is exhibiting in New York for the first time. The unit power plant is supported in the center of the chassis at the front and rear, the rear journal being formed outside the universal joint which supports the forward end of the torque tube. This renders the plant independent of any wearing movement in the frame side members. The third point of support, which really is employed only to absorb the torque reaction of the motor itself, is a bracket on the right side which also is used to support the steering gear. A novel feature of the motor construction is the method of mounting the camshaft, which is on the right side, and which, with its bearings and driving gear, is bodily removable from the side after a dozen bolts have been taken out. This renders it possible to get at that portion of the plant without dismantling the radiator, and by a special system of marking the ends of certain gear teeth, also solves the problem of timing the valves without uncovering the gears in front. The motor is claimed to reveal all the free running qualities which result from the placing of the exhaust valves in the center of the cylinder heads.

The clutch is of the inverted cone type, the gearset is selectively actuated, and the new models, as compared with those of last year, have longer rear springs, adjustable

pedals and a new style of radiator, which

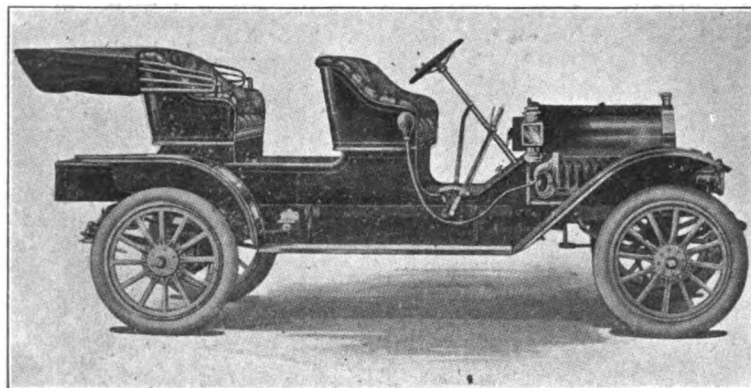


LION THREE POINT MOUNTING

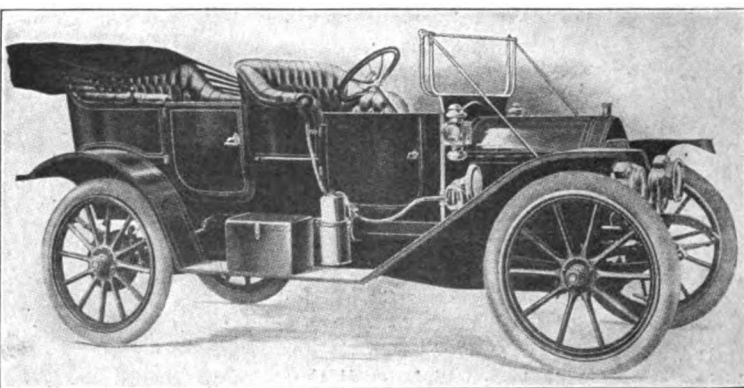
is of the honeycomb type. The exhibit is rendered conspicuous by a flaming red road-

ster of the two-passenger type, with barrel gasoline tank on the rear deck, electric lights built solidly into the dash and a complete equipment. The touring models, needless to add, are of the closed-front pattern.

One of the cars that has matured rapidly since it was introduced to the New York showgoer one year ago is the Cole 30. It now has the popular unit type of power plant with the four cylinders of its motor cast in L form, the carburetter being mounted on the left side, while, as is good practice from the standpoint of safety, the magneto is carried on the right side, together with the water pump. The cylinder dimensions have been increased, and now are $4\frac{1}{4} \times 4\frac{1}{2}$ inches, instead of 4×4 as formerly. In connection with a general enlargement of the car, the wheelbase has been increased from 108 to 118 inches, the tire sizes have been increased from $32 \times 3\frac{1}{2}$ to 34×4 inches, and the frame length has been brought up to 140 inches, while a double drop has been introduced in it. The rear axle now is of the full-floating type. In the matter of equipment the Bosch magneto now is standard, while Firestone demountable rims are mounted on all models. Both racing roadster and standard touring models are exhibited, the latter with the inevitable front doors. Although the name Cole 30 still is retained, it is explained that by increasing the cylinder sizes and giving the motor a very slight inclination in the frame, so as to secure a more nearly straight-line drive under normal conditions, the actual



GAYLORD CONVERTIBLE UTILITY CAR

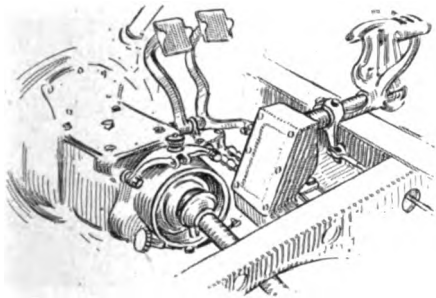


LION CLOSED FRONT TOURING CAR

effective power has been increased from 30 to 36 horsepower.

New, in the sense of not having been exhibited at a New York show hitherto, the Bergdoll car is one of the sort that would attract attention at any show, but which is rendered conspicuous at this particular one because of its general solidity of appearance and also by reason of the several points in its design which have been developed in a thoughtful and more or less original manner. The motor, to which the gearset is directly attached to form a unit type of plant, is of the block type, with double ball-bearing crankshaft, but is particularly distinguished by the manner in which the intake manifold is cast in one piece with the right-hand cover for the water jacket.

This general style of construction already is familiar to those who have made a close study of one or two of the more prominent



BERGDOLL SELECTIVE CONTROL

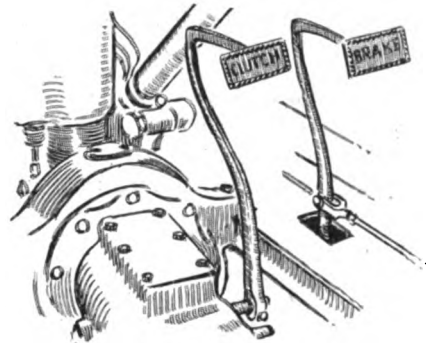
types of American car, but in this instance a divergence has been made from the accustomed practice in this respect. Instead of lying close to the cylinders with a single wall of metal between the mixture and the water jacket, the intake passage is removed some little distance from the cylinder block and is held rigidly by means of a thick web in the casting. The object of this, it is explained, is to prevent the gas from becoming overheated, and, in consequence, unduly expanded. As the carburettor employed is of the hot-water jacketed type, the heating influence of the water jacket is not necessary to assist in the formation of the gas.

The power plant is carried on a sub-frame, and the operating levers and selective mechanism are mounted on the main frame member on the right side, and enclosed in a neat and complete housing. To guard against possible distortion, the connection between the selective mechanism and the gear-shifting rods is made by means of flexible links. The service brake is mounted on the propeller shaft directly over the front universal joint, and is so devised that it may be adjusted by turning a small hand screw.

Both the coupe and touring models reveal considerable originality of design. The former suggesting the old Colonial in its general lines and small-pane windows, and

the latter with its closed-front being none the less comfortable for its modern features.

Considered from any point of view the DeTamble line is standard and up-to-date. Considered from the price standpoint, it is little short of remarkable. The specifications for all models are those which already are familiar as applied to high-priced cars, both in relation to power, size and equipment. The prices are low under the circumstances. The \$1,000 model G is particu-



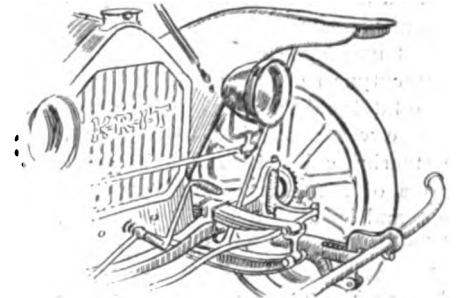
DE TAMBLE PEDAL MOUNTING

larly attractive, being a 36 horsepower, two-passenger roadster with high sides, shapely lines, the popular style of oval rear fuel tank mounted back of the seat and rangy appearance. One point in the construction of the chassis that at once appeals to the eye of the experienced man is the particularly long leverage applied to the clutch and brake pedals. The former, indeed, besides having a good length above the chassis line, extends clear to the bottom of the inverted vertical change gear, which forms a part of the unit power plant, and, therefore, is nearly two feet in length. The motor is of the conventional quadruple type, with L-head cylinders, constant level oiling system, centrifugal water pump and Splitdorf dual ignition. The clutch is of the multiple disk type; the change-speed gear is selectively actuated; the propeller shaft is enclosed in a torque tube, and, hence, has but one universal joint; the springs are semi-elliptic in front and three-quarters elliptic in the rear, and the wheels, on the three models current, and on a big seven-passenger, closed-front car, listing at the astonishingly low price of \$1,675, are equipped with quick detachable demountable rims.

Underslung suspensions, while not new, are decidedly novel, and, therefore, the new model U Krit, which is the first of the Krit Motor Car Co.'s products to be built in that fashion, draws considerable attention. Apart from the underslung frame construction, the model is noteworthy, for it is finished in de luxe fashion, equipped with electric lights, windshield and top, and the car on exhibition, which is finished in white, appropriately striped, is one of the eye-

catching features of the show. The suspension is an adaptation of that which is used on all Krit models, and which is of the three-point support style, that is to say, with semi-elliptic springs in front and a single semi-elliptic cross member in the rear. For the underslung chassis the front springs are set very flat, while the frame side members, instead of curving down at the front end, are brought upward, the entire frame lying beneath the plane of the axles, instead of above it, as commonly is the case. The rear spring is placed in front of the axle, the shackle links being very long in order to bring the rear of the frame down to the proper level. The car is extraordinary in that its construction renders it safe to use 36-inch wheels on a wheelbase of only 96 inches. The use of large tires overcomes the natural difficulties of the underslung suspension by affording a road clearance of no less than 10 inches.

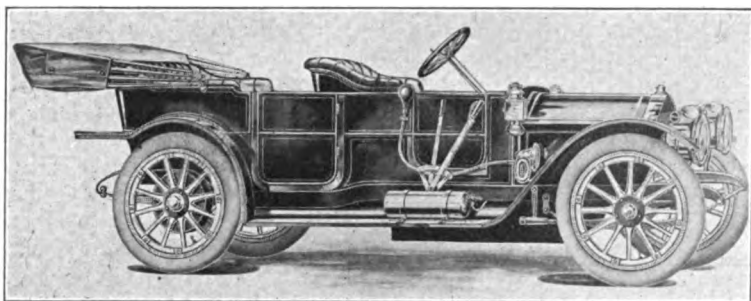
This and the more conventional Krit



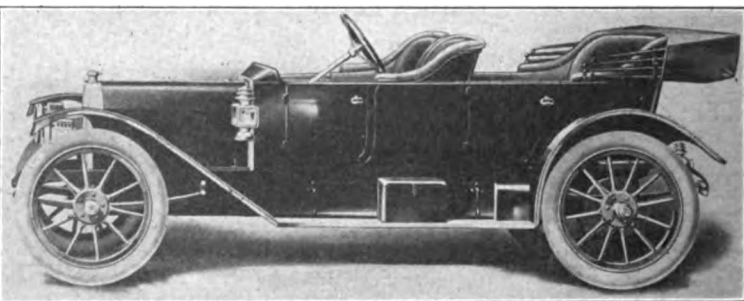
KRIT UNDERSLUNG FRAME

model this year are equipped with a very neat little unit power plant with block motor of 22½ rated horsepower, which has a double ball-bearing crankshaft. Ball bearings also are used for the wheels, and in many respects the construction is the same as has found favor with the builders of large and high-priced cars. Among alterations noted this year may be mentioned the use of two pedals for controlling the multiple disk clutch and the service brakes, instead of one as heretofore; the adoption of a new and larger radiator, and the use of higher grades of steel in the front axle and steering arms. The driver's seat is placed on the left in both models, and in the standard chassis the control levers are placed outside. In the new underslung car, however, the emergency brake lever only is placed outside, while the lever which actuates the two-speed selective change gear is placed in the center of the footboard.

The Velie Motor Vehicle Co. is one of the several manufacturers which lay claim to a large amount of power in their products in proportion to vehicle weight. The Velie 40, for example, affords roughly one horsepower for every 53 pounds of weight; which is to say, that the standard touring car weighs something like 2,750 pounds, while the engine is capable of developing no less than 52 horsepower when forced to



COLE 30 CLOSED FRONT TOURING CAR

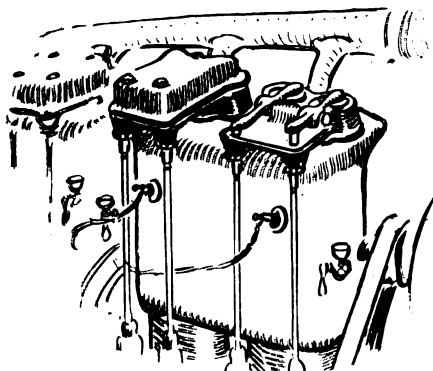


FIRESTONE-COLUMBUS CLOSED FRONT TOURING CAR

its full capacity. The Velie product, which is one of the most prepossessing ones in the Palace, differs from that of last year only in a few points. Cork inserts have been introduced in the three-plate clutch, for example, the Atwater Kent system of ignition has been adopted, the water pump now is cast in bronze instead of the special metal formerly employed in the die-cast casing, and, as a matter of detail, the cylinders now are annealed and enameled, and all metal-work trimmings are nickel plated. The new racytype roadster model is both speedy and solid looking, and is equipped with a small circular windshield mounted over the steering column. The exhibit is graced by one of the few polished chassis in the show, and by all odds the most elaborately finished.

Among the most attractive cars at the show is the Cunningham, which also takes its place in the line of newcomers. Produced by an old-time carriage building concern, James Cunningham, Son & Co., it reveals not only the superior finish of bodywork, which is naturally expected under the circumstances, but a degree of mechanical excellence which is beyond the average with products that are exhibited for the first time. The unit type of power plant employed is original in design and possesses a number of points of originality. In order to prevent the effects of possible frame distortion the engine base, to which the change gear and housing for the multiple disk clutch is attached, is carried on four lugs bolted to the side members, while the crankcase is webbed outwardly to meet the frame in a solid pan. On the left side, which is

occupied by the carburetter alone, a well is formed in the pan to accommodate the gas generating device, this feature being necessary because of the great length of intake pipe employed. As a drain is provided in the bottom of the well, it is apparent that the car is rendered reasonably



CUNNINGHAM VALVE GEAR

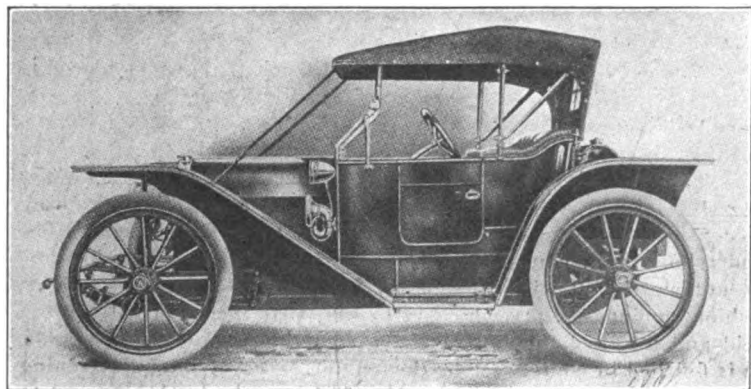
safe from the risk of catching fire from the ignition of accumulations of stray vapor.

The cylinders are of the valve-in-the-head pattern, the overhead rocker arms being fully housed in aluminum casings, which are readily removeable. The gear-shifting lever is brought inside the frame—a feature which renders it possible to have inside control, save for the emergency brake, with the new style closed-front bodies. The final drive is by a double-jointed propeller shaft, the forward joint of which is supported by a cross-frame member, in order to relieve the rear bearing of the gear box from excessive load. The torque bar, which is essential to this type of driving arrangement, is of the tubular pattern,

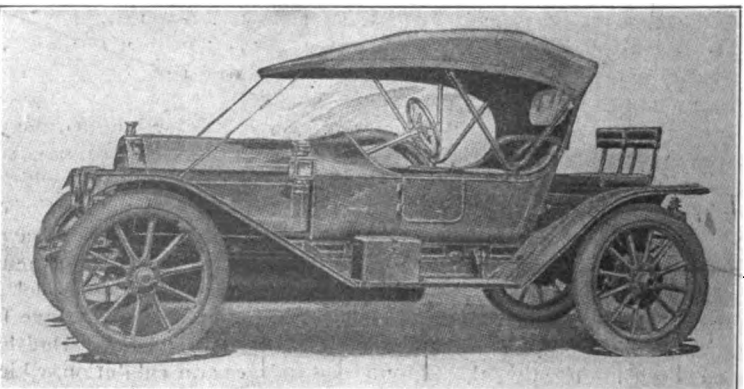
hinged to the rear axle. A noteworthy feature of the display is the large and rather impressive limousine which possesses a new wrinkle in this country in the use of low front doors.

Clutch and transmission are conspicuous by their absence from the Petrel cars at the stand of Spencer, Llano & Briner, the functions of these mechanisms being carried out by means of friction disks. The disks are heavily constructed, paper being used on the driven disk to obtain the necessary degree of friction. A pedal controls the driving disk and permits of its being withdrawn from contact with the driven member in much the same manner as the ordinary clutch is used; a lever controls the speed variations and the reverse; the final drive is by double chains. All motors are of the L-head type and have cylinders cast in pairs. Ignition is by high-tension magneto and batteries. Lubrication is effected by a gear-driven centrifugal pump which maintains a constant oil level in the crankcase. Three body styles are shown and embrace a five-passenger touring car mounted on a 30 horsepower chassis; a five-passenger torpedo model, mounted on a 40 horsepower chassis, and a runabout, mounted on a 30 horsepower chassis. Petrel bodies are roomy and comfortable, a notable feature being the wide seats in all the models. Conforming to popular demand, front door and torpedo models are listed and are supplied when preferred to the open type of body.

A novel form of rear axle and differential housing is one of several new features em-



KRIT UNDERSLUNG RUNABOUT



LEXINGTON ROADSTER WITH DOUBLE RUMBLE SEAT

bodied in the Firestone-Columbus cars the Columbus Buggy Co. is exhibiting. Two cars, model 66-C, a 40 horsepower, five-passenger, front-door touring car, and model 86-C, a 32 horsepower, five-passenger touring car also with front doors, are on view, the last-named being a new creation with 113-inch wheelbase, which is shown for the first time. In both cars the motors are practically the same except for a slight difference in size. Both have Atwater Kent unisparker and Mea magneto ignition and three-speed selective transmission. The feature of left-hand drive and center-gear, shift-lever controls also obtains in both models. One of the principal features is the construction of the new rear axles which are fitted to the cars. In these axles, which are of pressed-steel formed in one piece, the reinforcement is so designed that the effect of a channel section is obtained. A large removable plate at the back allows of the withdrawal of the differential complete after four bolts and the full-floating drive axles have been removed. Annular ball bearings are used throughout on all models.

Several cars of the lighter class now are equipped with what is termed three-point spring suspension, but in only one instance, so far as is known, does this arrangement include the use of a full-elliptic rear spring. The car in question is the Paige-Detroit, a product which the Paige-Detroit Motor Car Co. is showing for the second time in the Palace, and which possesses a number of original features outside the method of suspension. The mounting of the rear spring is as unusual as is its type in this connection. It is supported by a bracket which extends from the differential housing in the center of the axle, and therefore permits a lower chassis level than commonly is possible with full-elliptic construction.

Formerly built exclusively with a three-cylinder, two-cycle engine, the new models

are equipped with a four-cylinder, four-cycle motor of the block type, which is rated at 25 horsepower, to which the gear case is strongly bolted to form a unit power plant. The gearset, which is selectively actuated, affords two forward speeds. Ignition is by Bosch magneto, cooling is by thermosiphon circulation, and lubrication is maintained automatically by means of a plunger pump. For those who prefer the two-cycle type of motor, an option of that type is offered. The line is displayed in coupe, roadster, physician's model and four-passenger touring car forms, the latter vehicle having a detachable rear seat which renders it serviceable for general utility purposes.

J. M. Quinby & Co., the well-known body builders, exhibit four specimens of coachwork, three of which are on Pennsylvania chassis and one on an Isotta-Fraschini, for which they are agents. Richly upholstered in dark broadcloth and with seats and equipment of the most luxurious character, the brougham body fitted to the last-mentioned chassis forms the chief feature of the exhibit, though the other bodies are hardly less noteworthy. A one-quarter glass brougham is what the designers style this particular model, and it has a seating capacity inside for six persons. The chassis is equipped with a six-cylinder, 25 horsepower motor. The five-passenger touring car body is fitted on a 50 horsepower Pennsylvania chassis, and a collapsible landaulet body upholstered in leather, mounted on a 25 horsepower Pennsylvania chassis, and a brougham body upholstered in buff-colored whipcord and mounted on the same style chassis are the other bodies shown. Pennsylvania chassis are distinguished by their overhead valve motors and the unit axle transmission. Cylinders are cast in pairs, the valves being in cages and operated by individual rocker arms. Transmission is selective, three speeds forward

and reverse. The chassis remains practically the same for the ensuing year, those changes which have been made being of minor detail.

Two five-passenger Auburn cars, one of which is a front-door model, constitute the La Due-Carmer Motor Car Co.'s exhibit. Separately cast cylinders and Remy dual ignition continue to be features of these cars, both of which are 40 horsepower. A leather-faced cone clutch with a novel form of brake takes the place of the multiple disk clutch used heretofore, and the wheelbase of the cars has been increased four inches, bringing the front axle out flush with the radiator. The front-door model is a pleasing combination of gray and nickel plate, the upholstery being done in dark colored leather. Doors on this model are so hung as to close by gravity, a feature which precludes the possibility of damage through doors coming unlatched and swinging open. The painting of the open type car, royal blue with a white stripe, forms a pleasant contrast to the light buff-colored upholstery.

One of the late arrivals was the Van "22," which is one of the new cars of the season, coming all the way from Grand Haven, Mich. It is exhibited by Hull & Kehew, of Boston, Mass. The car is of the very light runabout type, equipped with a quadruple motor of $3\frac{3}{4} \times 4$ inches bore and stroke, the cylinders being cast in pairs with the valves mounted in the heads and actuated by overhead rocker arms. A somewhat unusual feature is the uniting of the exhaust and intake manifolds in a single casting, whereby the amount of external piping is reduced and the appearance of the motor simplified correspondingly. Three-speed selective change gear, shaft-drive and full-elliptic rear springs are other of its features. Top, lamps and magneto ignition are included in the equipment.

Summary of the Pleasure Cars at the Palace Show and of Their Chief Characteristics

Abbott Motor Co., Detroit, Mich.—Four Abbott-Detroit, 4-cylinder, 26 horsepower, water-cooled, shaft-driven cars. Three touring cars, one runabout and one coupe. Features: Overhead exhaust valves; selective transmission; dual ignition; option between 32 and 34-inch wheels; electric lights; closed front bodies with levers inside. Price range, \$1,500-\$2,350.

Alpena Motor Car Co., Alpena, Mich.—Two Alpena Flyers, 4-cylinder, 33.6 horsepower, water-cooled, shaft-driven cars. Two touring cars. Features: Unit power construction; three-point suspension; one pedal control; straight line drive; one universal joint; $\frac{3}{4}$ rear platform spring suspension; full floating and full ball-bearing rear axle, etc. Price range, \$1,450-\$1,600.

H. H. Babcock Co., Watertown, N. Y.—Three Babcock, 4-cylinder, water-cooled, shaft-driven cars. One closed front, 40 horsepower touring car; one 35 horsepower touring car, and one chassis. Fea-

tures: Front doors; Bosch dual ignition; ventilators in sides of dash. Mechanical changes: Honeycomb radiator, instead vertical tube radiator. Price range, \$2,500-\$3,000.

Bader, C. S., New York City—Three Lexington, 4-cylinder, 40 horsepower, water-cooled, shaft-driven cars. One touring car and two roadsters. Features: Double ignition with Bosch magneto; L-head motor; 35-gallon gasoline tank on roadster. Price range, \$1,650-\$2,500.

L. J. Bergdoll Motor Co., Philadelphia, Pa.—Two Bergdoll, 4-cylinder, 30 horsepower, water-cooled, shaft-driven cars. One Colonial coupe, one touring car and one chassis. Features: Cylinders cast en bloc; two bearings—ball bearing and crank shaft; water jacketed intake pipe; Raybestos lined multiple disk clutch running in oil; rear axle with pressed-steel housing; transmission suspended directly from rear-end of motor. Mechanical changes: Raybestos lined multiple disk

clutch in place of all metal disks; double universal joints on driving shaft in place of single; pressed-steel rear axle housing in place of cast housing; double drop extra heavy frame in place of single drop frame. Models: All 4-cylinder, 30 horsepower. Price range, \$1,600-\$2,600.

Carter Motor Car Corp., Washington, D. C.—One Washington, 4-cylinder, 40 horsepower, water-cooled, shaft-driven car. One touring car and one chassis. Features: Clutch and brake inter-connected; long-stroke motor; long springs; drive shaft in torsion tube; Bosch dual ignition. Mechanical changes: Wheelbase lengthened six inches; wheels increased to 36-inch; full floating rear axle and drop front axle. Price, \$2,250.

Clark-Norwalk Co., Brooklyn, N. Y.—Clark 4-cylinder, 30 horsepower, and Norwalk 4-cylinder, 35 horsepower, water-cooled, shaft-driven cars. Two Norwalk touring cars, one Norwalk chassis, one each Clark touring car, runabout and

- chassis. Features of Clark: Cylinders cast separately; fine bearing crankshaft; aluminoid fenders. Features of Norwalk: Three-point suspension; cylinders cast separately; long-stroke motor; overhead exhaust valves; offset cylinders. Price range, Norwalk, \$1,600-\$1,700; Clark, \$1,150-\$1,250.
- Columbus Buggy Co., Columbus, Ohio.—Two Firestone-Columbus 4-cylinder, water-cooled, shaft-driven cars. One 40 horsepower touring car, one 35 horsepower touring car. Features: Left-hand drive and right-hand gear shift levers. Mechanical changes: Motor stroke increased to five inches; dual ignition; Mea magneto. Price range, \$1,850-\$2,750.
- Colt-Stratton Co., New York City.—Three Cole 4-cylinder, water-cooled, shaft-driven cars. Two touring cars, one runabout and one chassis. Features: Unit power plant; three-point suspension; L-head motor; cylinders cast in pairs; selective transmission. Mechanical changes: Wheel base lengthened 10 inches; tire sizes increased two inches; rear axle full floating type; demountable rims; motor size increased from 4x4 to 4½x4½ inches. Price range, \$1,500-\$1,650.
- James Cunningham Son & Co., Rochester, N. Y.—Two Cunningham 4-cylinder, 40 horsepower, water-cooled, shaft-driven cars. One limousine, one touring car and one chassis. Features: Unit power plant of accessible design and rigid construction; long-stroke motor; valves in head; offset cylinders; valve gear protected by dust-proof caps. First time exhibited in New York. Price, \$3,500.
- Correja Motor Car Co., New York City.—One Correja 4-cylinder, water-cooled, shaft-driven car; one 35 horsepower runabout. Features: High scuttle dash, front doors and electric lights. Mechanical changes: Bore of motor increased ¼ inch and stroke shortened ¼ inch; T style motor instead of L; brakes external and internal instead of both internal. Price, \$1,450.
- Crawford Automobile Co., Hagerstown, Md.—Two Crawford 4-cylinder, 35 horsepower, water-cooled, shaft-driven cars. Two touring cars. Features: Front doors with controls inside; selective transmission; Bosch magneto. Mechanical changes: Full floating rear axle; size of wheels increased. Price range, \$1,325-\$1,650.
- Darre, Richard B., New York City.—Cyclonette 2-cylinder, 10 horsepower, air-cooled, three-wheeled cars. One runabout and one delivery car. Features: Three wheels; 2-cylinder, air-cooled motor over drivewheel in front; wire wheels; surface carburetter; water-cooled exhaust valves. Price, \$900.
- DeTamble Motors Co., Anderson Ind.—Two DeTamble 4-cylinder, 36 horsepower, water-cooled, shaft-driven pleasure cars. One touring car, one runabout and one chassis. Features: Unit power plant; propeller shaft in torsion tube; dual ignition; brakes equalized. Mechanical changes: Differential carried on high-duty roller; bearings and housing strengthened. Price range, \$650-\$1,675.
- Gaylord Motor Car Co., Gaylord, Mich.—One Gaylord-Utility 4-cylinder, 30 horsepower, water-cooled, shaft-driven, convertible car. One convertible touring car. Features: Motor clutch in unit; change gear, mounted on rear axle; tray body with removable rear seats. Price, \$1,250.
- Henry Motor Car Sales Co., Chicago, Ill.—Four Henry 4-cylinder, water-cooled, shaft-driven cars. Two 40 horsepower touring cars, one 40 horsepower runabout, one 25 horsepower runabout and one 40 horsepower chassis. Features: Long-stroke motor; thermo-syphon cooling; circulating oil system; multiple jet carburetter; selective transmission drive shaft in torque tube. Price range, \$900-\$1,800.
- Haupt Mfg. Co., H. S., New York City.—Haupt 4-cylinder, 60 horsepower, and Rockwell 4-cylinder, 20 horsepower, water-cooled, shaft-driven cars. One Haupt touring car and one Rockwell taxi-cab and one landulet. Features: Haupt Cars—Four-point suspension of motor; three-point suspension of gear set; T-head motor; cylinders cast in pairs. Rockwell Cars—Set spark; left-hand drive and right-hand control; motor and transmission interchangeable. Price range of Haupt cars, \$5,000-\$6,000.
- Johnson Service Co., Milwaukee, Wis.—Three Johnson 4-cylinder, shaft-driven cars. One 50 horsepower, closed-front touring car; one 40 horsepower touring car, and one 30 horsepower touring car. Features: Special anti-kicking starting device attached to magneto to start engine without spinning crank. Lights: Electric on seven-passenger car set flush with face of dash. Mechanical changes: ¾ elliptical rear springs; heavier pressed steel frames; flatter springs; design of radiator altered; magneto and dual ignition added; lower valve lift on engine; gearless circulating pump; carburetter changed to valve side of engine; universal joint between clutch and transmission; improvement in transmission design with outside locking device. Price range, \$1,600-\$3,100.
- Imperial Auto Co., Jackson, Mich.—Five Imperial 4-cylinder, water-cooled, shaft-driven cars. Two 35 horsepower touring cars, one 38 horsepower touring car, one 45 horsepower touring car and one 35 horsepower runabout. Features: Unit power plant suspended at three points; valves and combustion space easily accessible; selective transmission. Mechanical changes: Unit power plant; heavier axles; I-beam instead of tubular front axle; new control set. Price range, \$1,450-\$2,100.
- Krit Motor Car Co., Detroit, Mich.—Three Krit 4-cylinder, 22½ horsepower, water-cooled cars. One chassis and one each runabout, underslung runabout and coupe. Features: Model "U"—underslung suspension; oil, gasoline and water may be replenished without raising hood, floor or seats. Mechanical changes: Heavier fenders—extra fender iron on front fender; front axle of drop forged vanadium steel; steering spindle and arms vanadium steel; two pedals for clutch and brake instead of one; bracket for brake rods to prevent rattling; new radiator—three times capacity of old one. Price range, \$800-\$1,200.
- Kelsey Mfg. Co., C. W., Hartford, Conn.—Two Motorette 2-cylinder, 2-cycle, 10 horsepower, chain-driven, three-wheel cars. Two runabouts and one chassis. Features: Three-point suspension; 2-cylinder, 2-cycle opposed motor with simultaneous explosions in both cylinders; self-regulating continuous splash oil system; valveless motor with but five working parts. Price range, \$385-\$475.
- LaDue-Carmer Motor Car Co., New York City.—Two Auburn 4-cylinder, 35-40 horsepower, water-cooled, shaft-driven touring cars. Features: Cylinders cast separately; Remy dual ignition; novel form of clutch brake. Mechanical changes: Leather cone clutch in place of multiple disk; radiator brought back flush with axle; wheelbase lengthened four inches. Price range, \$1,000-\$3,000.
- Lion Motor Car Co., Adrian, Mich.—Three Lion 4-cylinder, 40 horsepower, water-cooled, gasoline cars. One chassis and one touring car, closed-front touring car and runabout. Features: Unit power plant with inverted cone clutch. Mechanical changes: Longer rear springs; adjustable pedals; interchangeable valves and Mercedes radiator. Price range, \$1,450-\$1,600.
- McFarlan Motor Car Co., Connersville, Ind.—Three McFarlan 6-cylinder, 35 horsepower, shaft-driven, water-cooled cars. Two touring cars and one runabout. Features: Overhead valves; Stromberg double jet carburetter; Splittorf magneto. Mechanical changes: Flywheel in rear of engine and transmission enclosed. Price range, \$2,000-\$2,600.
- Metz, Co., Waltham, Mass.—Three Metz 2-cylinder, 10 horsepower, air-cooled, chain-driven cars. Three runabouts and one chassis. Features: Friction straight line drive; 2-cylinder, air-cooled motor. Price, \$485.
- Michigan Buggy Co., Kalamazoo, Mich.—Four Michigan 4-cylinder, 30 horsepower, water-cooled, shaft-driven cars. Three touring cars, one runabout and one chassis. Features: Block motor with 2-inch diameter, two-bearing crankshaft; Stromberg carburetter; camshaft and cams integral; square pushrods with large bearing surface and capped with fiber washers. Mechanical changes: Hyatt roller bearings in transmission; rocker-arm, gear-shifting control. Price range, \$1,150-\$1,500.
- Only Car Co., New York City.—One Only single-cylinder, 12 horsepower, water-cooled, shaft-driven car. Features: Single cylinder, long-stroke motor; multiple jet carburetter; single pedal control. Price, \$800.
- Otto Motor Car Co., New York City.—Three Otto 4-cylinder, 30-35 horsepower, water-cooled, shaft-driven cars. Two touring cars, one runabout and one chassis. Features: Stromberg carburetter; transmission and differential in one housing; driveshaft in torque tube; brakes equalized. Mechanical changes: Full floating rear axle in R. I. V. bearings; one-piece phosphor bronze transmission and differential case; larger brake drums; bossed spokes in rear wheels; universal encased. Price range, \$1,950-\$3,000.
- Paige-Detroit Motor Car Co., Detroit, Mich.—Four Paige 4-cylinder, 25 horsepower, water-cooled, shaft-driven cars. Two runabouts, one touring car and one coupe. Features: Option of 2 or 4-cycle motor. Mechanical changes: Selective transmission; three speeds forward and reverse. Price range, \$800-\$1,250.
- Paterson Co., W. A., Flint, Mich.—Three Paterson 4-cylinder, water-cooled, shaft-driven cars. Two 30 horsepower touring cars, one 35 horsepower touring car and one chassis. Features: Unit power plant; selective transmission; thermo-syphon cooling; dual ignition. Price range, \$1,150-\$1,600.
- Penn Motor Car Co., East Liberty, Pa.—Two Penn 4-cylinder, 30 horsepower, water-cooled, shaft-driven cars. One each touring car, runabout and chassis. Features: Thermo-syphon cooling; force-feed

oil system; long-stroke motor; selective transmission; long wheel-base. Price range, \$975-\$1,175.

Quinby & Co., J. M., Newark, N. J.—One Isotta-Fraschini brougham, one each Pennsylvania 25 horsepower brougham and 50 horsepower touring car, and one 25 horsepower Pennsylvania landaulet. Features: Isotta-Fraschini—Six-cylinder motor; cylinders cast in threes; plugs in valve pockets on sides. Pennsylvania—Overhead valves; three-speed selective transmission mounted as a unit with the differentials; force-feed oiler.

Scioto Auto Car Co., Chillicothe, Ohio—One 4-cylinder, 40 horsepower, water-cooled, shaft-driven car. Features: Trans-

mission on rear axle; one universal joint; selective three-speed transmission. Price range, \$1,675-\$1,700.

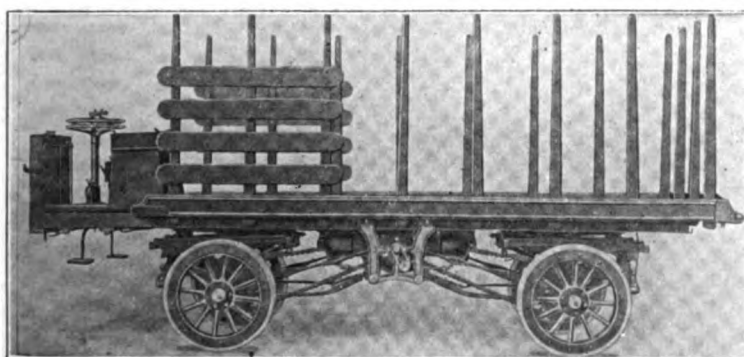
Spencer, Llano, Briner Co., New York City—Three Petrel 4-cylinder, friction-driven cars. One each 30 and 40 horsepower touring cars, one 30 horsepower runabout and one chassis. Features: Cylinders cast in pairs; Remy dual ignition; friction transmission; service brake on jack-shaft. Price range, \$850-\$1,600.

Velie Motor Vehicle Co., Moline, Ill.—Five Velie 4-cylinder, 40 horsepower, water-cooled, shaft-driven cars. One limousine, one touring car, one torpedo touring car, one toy tonneau touring car, one racetype runabout and one chassis. Features: Ten annular bearings on motor; three-disk

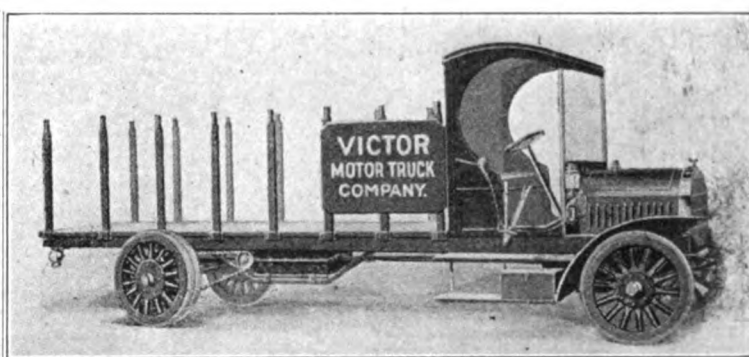
dry-plate clutch with cork inserts. Mechanical changes: Roller valve tappets; adjustable pedals; cork inserts in clutch; bushed pistons. Price range, \$1,800-\$3,000.

Warren Motor Car Co., Detroit, Mich.—Five Warren-Detroit 4-cylinder, 30 horsepower, water-cooled shaft-driven cars. Three touring cars, two runabouts and one chassis. Features: Block motor; selective transmission; equalized brakes; double ignition, and extensive equipment. Mechanical changes: Larger bodies and transmissions; brakes increased two inches in diameter and equalized; new gear set; electric light equipment on models F and G. Price range, \$1,200-\$1,750.

The Commercial Vehicles at the Palace Show



AMERICAN STANDARD FIVE TON TRUCK



VICTOR FIVE TON TRUCK

Whatever may be said of the exhibition of pleasure cars as a whole, the display of commercial vehicles is more than ordinarily satisfying, and reveals the trend of the times both in respect to quantity and quality. There are a number of vehicles of both the light and heavy duty classes, and in the former group in particular is evidenced that sort of development that makes for serviceability and economy in use. Several of the lighter commercial vehicles, indeed, are distinctly noteworthy for the care with which interchangeable and demountable features have been worked out. Another noteworthy point is that in only a few instances are the lighter vehicles of the converted touring type. The others are distinguished by an absolute independence of the traditions of pleasure car construction, and are built on the broad lines of genuine commercial machinery, which is to say, that grace of form, where necessary, has been sacrificed to utilitarian purpose.

One of the vehicles which belong to the class of large and solidly-built delivery wagons is the Crown, one of the late arrivals at the show. Though built in Milwaukee, and by the Crown Commercial Car Co., which has been in business for several years, the car may be said to have an Eastern affiliation which entitles it to some little local esteem, inasmuch as it is being distributed solely by the Crown Commercial Car Sales Co., which is closely related

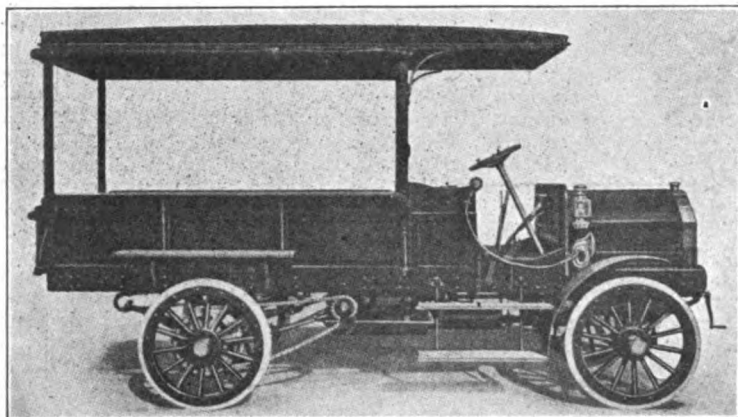
to the Otto Car Sales Co., distributor of the Otto car. The Otto Gas Engine Co., which produces the Otto, as a matter of fact, is interested in the Crown manufacturing company, and the product of that concern is built under the direction of a resident supervisor from the Otto company. This explanation is necessary because the arrangement is relatively a new one, and because the Crown car in its present state may be termed virtually a new product.

One feature of the Crown wagon upon which considerable stress is laid, is the change gear mechanism, which is built to be handled by the longshoreman type of operator. The gearset, while of the selectively operated variety, is not of sliding pinion construction, but has gears which constantly are in mesh, the changes of speed being effected by sliding dog clutches. As the clutches are of solid construction and positive action, they are destined to withstand a deal of abuse before becoming in any way untrustworthy. The motor used is of 22 rated horsepower, has a silent type of valve gear, thermo-syphon cooling and magneto ignition. A novel point in its equipment is that an option is offered in the matter of lubrication, either the sight feed or self-contained base circulating systems being available. The car is mounted on 36-inch wheels shod with 2½-inch solid tires.

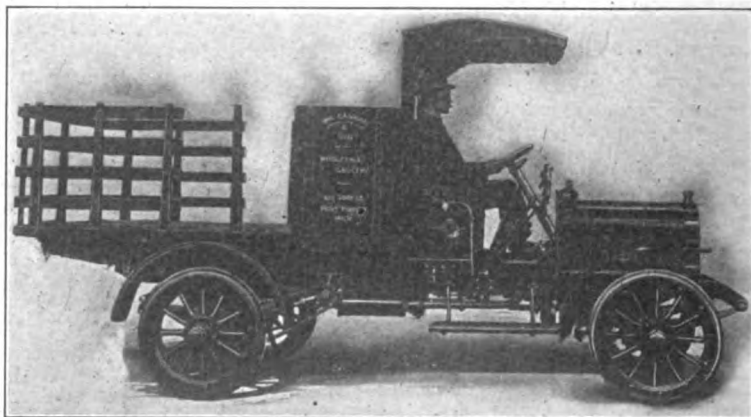
Successfully exploiting the two-cycle principle as applied to an air-cooled motor,

the Chase Motor Truck Co. is showing a variety of models, including the new model J, which is of two-ton capacity. This is the largest vehicle in the line, and is distinguished from other machines at the show for the reason that the driver's seat occupies only half the width of the open-tray body, the loading space being proportionately increased in consequence. The engine, which is of the type standard with the manufacturer in question, is rated at 30 horsepower. Selective sliding change gear is used and a cone clutch. The other features of this particular model, however, are those which appertain to the remainder of the line. These include the armored wood frame, large wheels, solid tires and, in the case of the smaller models, planetary change gear. The air-cooling system of the Chase motors is peculiar in that the only fan used is that which is formed integrally with the flywheel. By the special formation of the bonnet, the air drawn in at the front is made to pass over all of the cylinders in uniform streams, and effective radiation thereby is secured.

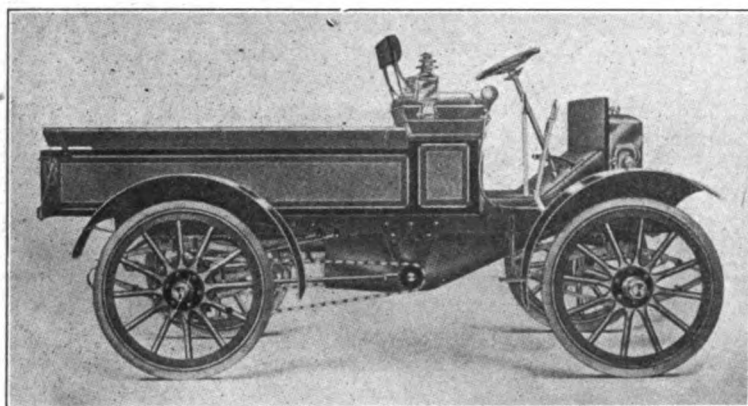
One of the most business-like members of the light commercial class, and one revealing at the same time a large number of very strong features is the Ewing, which is made and exhibited by the Findlay Motor Co. As a specialist in motor delivery wagons, this company has produced a light car in which low center of gravity, low



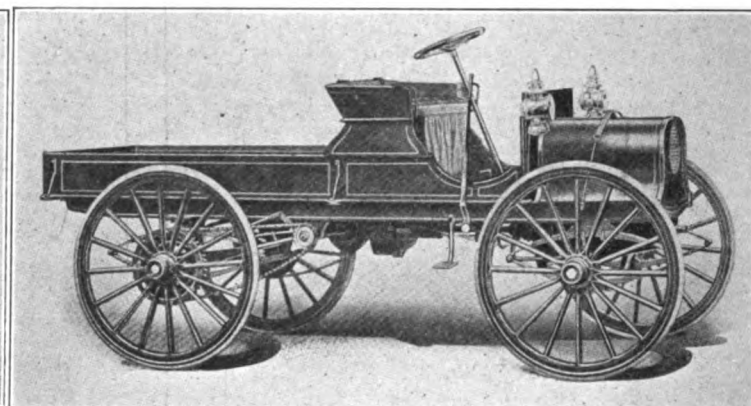
ATTERBURY ONE TON TRUCK



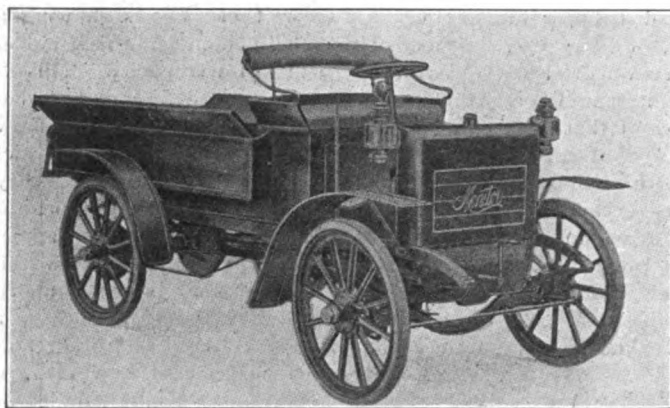
CASS ONE TON TRUCK



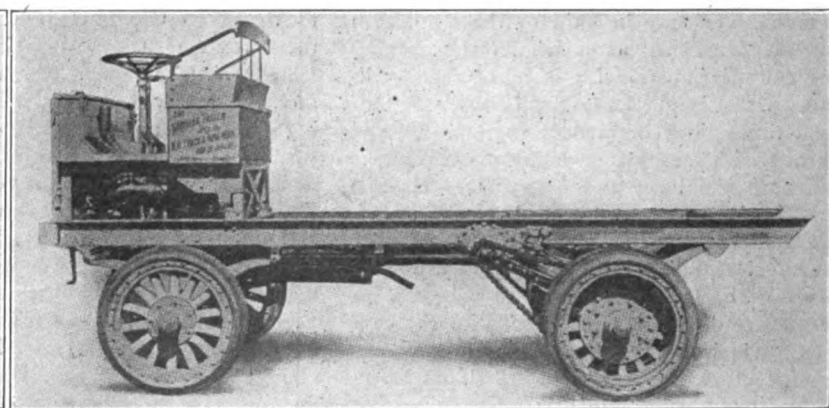
MARTIN 1000 LBS. DELIVERY WAGON



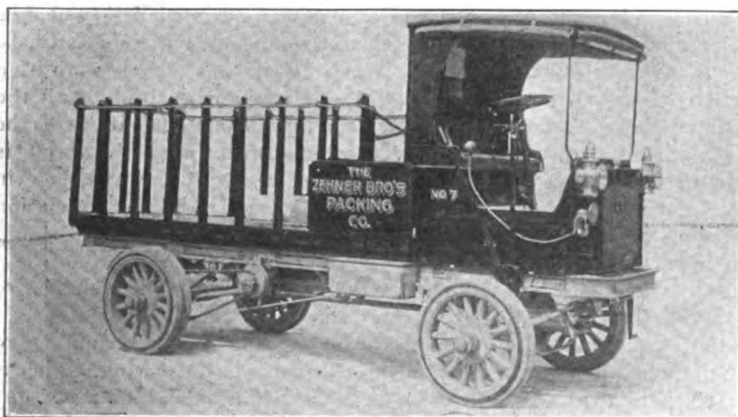
CHASE 500 LBS. OPEN EXPRESS WAGON



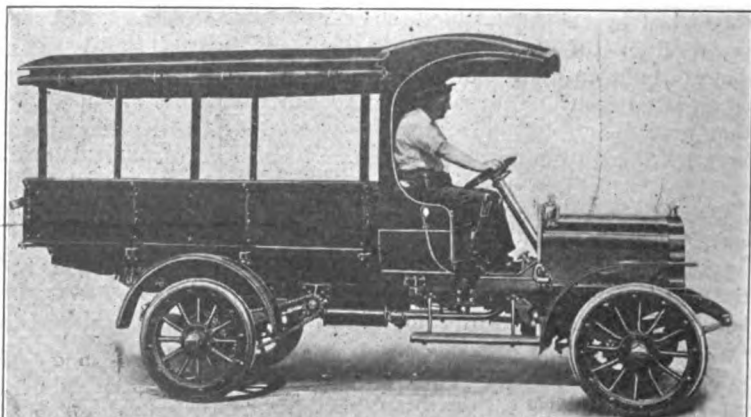
MONITOR LIGHT DELIVERY WAGON



MOELLER FIVE TON TRUCK CHASSIS



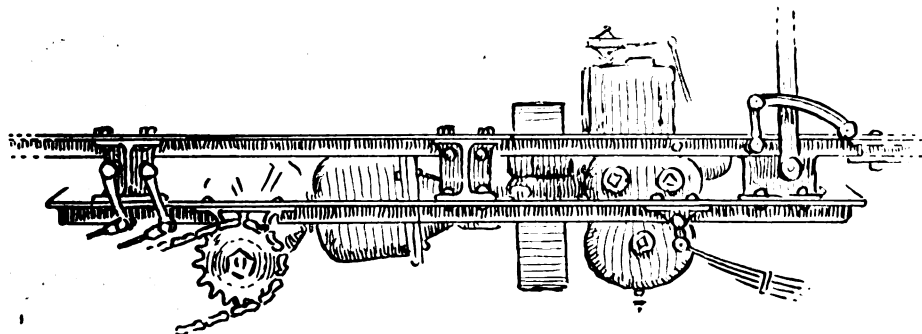
GRAMM THREE TON TRUCK



CASS ONE TON TRUCK WITH COVERED EXPRESS BODY

loading platform, right-hand drive, driver's seat in front of the wheels and an entire absence of protruding or damageable mechanism are striking features. The motor is of the twin cylinder, vertical pattern, water-cooled and mounted with the selective sliding change gear in a unit plant which is hung from three points. The flywheel is at the forward end of the plant, and is made of relatively large diameter in order to afford ample capacity for the fan action

speed gear. The construction of the machine is a little unusual in point of frame design to the extent that the sub-frame, upon which the engine and change gear are mounted, is carried directly beneath the side members of the main frame structure. As it is tied up to the main frame at several points, the effect is really that of a truss or girder, and the frame should prove exceptionally efficient, despite the use of not overly heavy angle sections in the units.



FRAME CONSTRUCTION OF THE LITTLE GIANT TRUCK

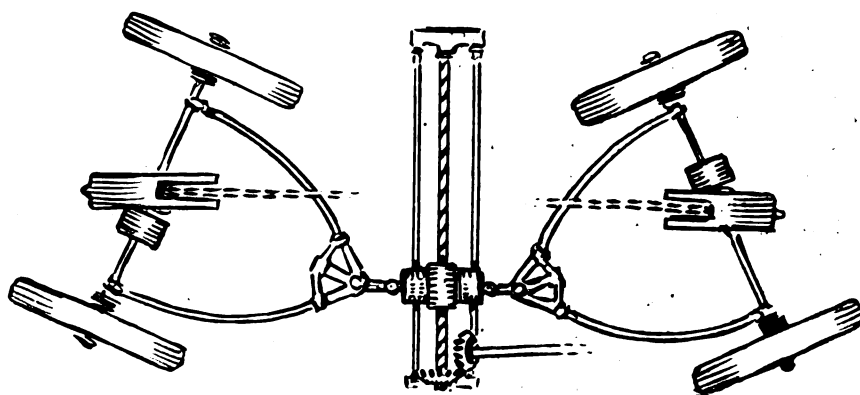
which it is intended to carry out. The radiator, by a most radical arrangement, is placed directly under the seat, a sheet-metal partition serving as an air passage to carry the draught up from beneath the floor. A substantial buffer beam is brought around the front of the chassis. The oval gasoline tank is placed directly back of the seat and over the motor compartment. A second model, also exhibited, is more on the order of the conventional automobile in point of chassis arrangement, though, like the other, built entirely and exclusively for business purposes. It is equipped with a 35 horsepower motor mounted under a hood in front and is rated up to 1,000 pounds' capacity whereas the smaller model is built to carry not over 500 pounds nominal load.

The Warren-Detroit, offering in the commercial line, is of the full-panel delivery wagon type, and has all the outward appearance in point of hood, fender, running board and control arrangements of the Warren line of pleasure cars. So that it be not mistaken for a mis-applied pleasure car, however, it may be explained that it is of heavier construction in several important respects, so that it is claimed to be fully up to its purpose as far as strength and durability are concerned. It is equipped with a block type of motor, selective change gear, magneto ignition and other approved features.

The Chicago Pneumatic Tool Co. shows the product of its first venture into automobile construction—a product which is practically new. It is of the lighter order of construction, and employs the favorite form of opposed motor by way of prime mover, together with a planetary change

Another point about the arrangement is that it permits the power plant to be carried entirely below the chassis plane, and therefore without interference with the body. Jump-spark ignition with dry battery, magneto being optional, force feed oiler, gravity cooling water circulation, three-quarter elliptic front springs and full-elliptic rear and brakes acting on 10-inch drums are other constructional features.

Displaying absolute freedom from precedent and extreme originality, the American Standard trucks, which are manufactured



AMERICAN STANDARD FOUR-WHEEL DRIVE AND STEER

by the American Motor Truck Co., of Michigan, and not by the American Motor Truck Co., of Lockport, N. Y., have such desirable features as four wheel drive and four wheel steer, accomplished in ingenious fashion. The steering is accomplished by swiveling the axles about their centers, the driving by making them both of the live type and communicating motion to them through an adaptation of the universal joint principle. In controlling the direction of the vehicle the axles are connected to a traverse block

supported under the center of the chassis by means of double strut rods or yokes which are attached to the axle ends. The block itself is mounted in guides and threaded on a long worm, which is rotated by the steering wheel. As the block is run back and forth along the worm it causes the axles to swing in opposite directions. The axles, drives, springs and turn tables are interchangeable, it may be added.

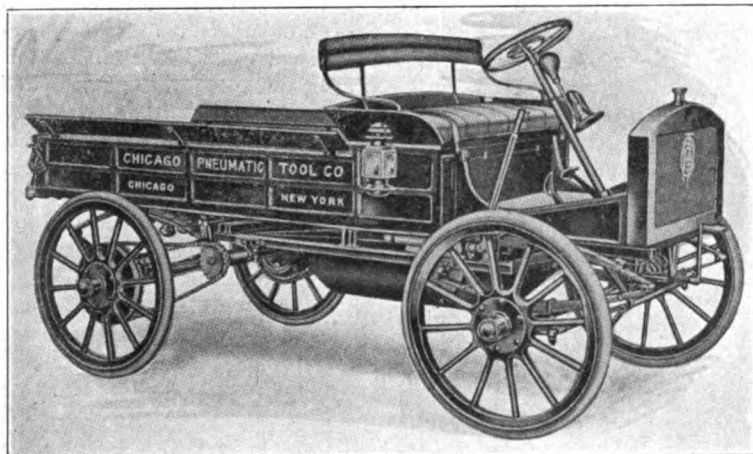
The motor is of the opposed type, mounted in the center of the vehicle and driving to the axles by chains, the speed reductions being accomplished through the medium of a planetary gear. The sprocket rings on the axles are mounted in guides, which are aligned by means of radius rods, and are virtually the outer members of a double ring universal or gimbal joint. That is to say, an inner or floating ring is employed, which is pivoted to the axle on a diameter at right angles to the diameter on which it is pivoted to the sprocket ring.

At the space occupied by the Beyster-Detroit Motor Car Co. there are in evidence two 1,500 pound delivery wagons, one closed and one open, and they constitute the line, which, by the way, is entirely new and now showing for the first time.

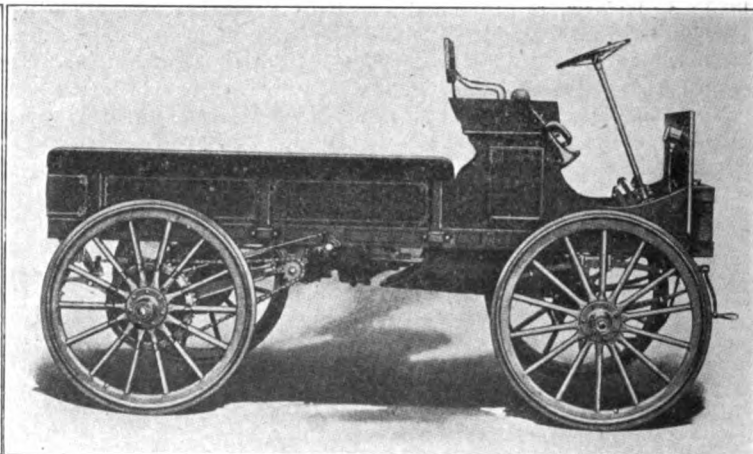
In that the flywheel of the motor, in these delivery wagons, is carried in front of the cylinders, it is out of the ordinary. The fixed spark is used with magneto and reserve dry cells, and a 6-80 storage battery furnishes current for a complete equipment of electric lights on all models as shown. The motor is a 20 horsepower, 4 cylinder vertical, cast in pairs and water cooled. A planetary transmission is used and the drive is to a jack shaft, thence by chains to each

rear wheel. Thirty-six inch wheels have $3\frac{1}{2}$ inch solid tires front and rear respectively, and the wheelbase is 106 inches.

An air-cooled, two cylinder opposed motor of 20-horsepower is hung underneath the body of the Coleman wagon, which is exhibited by the F. Coleman Carriage & Harness Co. Instead of being enclosed in a box, the motor is open at both front and rear, allowing a free circulation of air for cooling purposes. Another feature of the



LITTLE GIANT OPEN FLARE BOARD DELIVERY WAGON



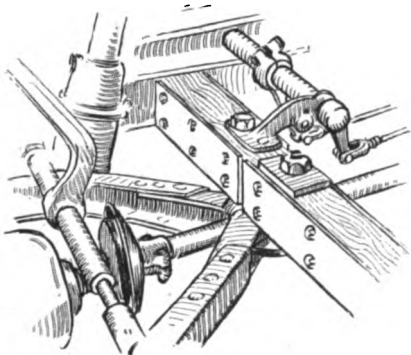
CORTLAND A1 1200 LBS. OPEN EXPRESS WAGON

car is its short wheelbase, 96 inches, but the body is so built that the box has exceptionally ample floor space. There is no dash in front of the seat, there being only a slight rise in the foot board of four or five inches. At the front, the body is curved to allow turning in a short radius.

A multiple disk clutch and planetary transmission are used, and the drive is by chain from motor to jack shaft and by double chain to rear wheels. The iron armored wood frame is suspended upon full elliptic springs.

The display of the Hart-Kraft Motor Co. is made up of a 2½-ton truck and two cars of 1,000-1,500 pounds' capacity, one a delivery and the other a funeral car. The latter is mahogany finished inside, and the long, glass panels in the side are draped in black. The gasoline is carried on the inside of the body in a flat tank which is so shaped as to allow the casket to project under the seat. The 2½-ton truck is equipped with a four-cylinder block motor, with cylinders 4¼ x 4¾ inches under a hood. It is of the "T" head type, and ignition is by Bosch high-tension magneto with fixed spark. A feature of this truck and also of the 1½-ton size is the three-point suspension of the sub-frame. The forward

part of the channel sections are rigidly secured to the front cross member, and, extending back of the clutch, are brought to a point on another cross member, where they are strapped by a band. Another



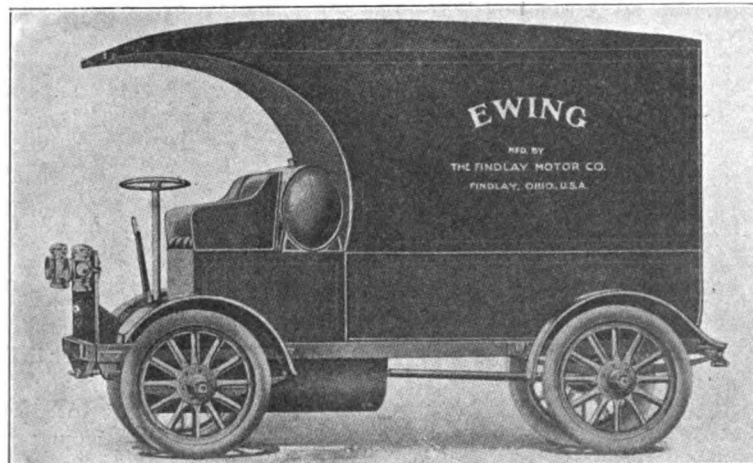
HART-KRAFT SUB FRAME

feature on the two larger sizes is the enclosed spiral spring support for the radiator. The smaller cars of 1,000 pounds' capacity, including the two shown, are built on the same chassis as heretofore, and equipped with a two-cylinder opposed motor of 16 horsepower.

The Martin Carriage Works exhibits a model new to the market, but which has

been undergoing tests for some time. It is a 2½ to 3-ton truck, with a 36 horsepower, four-cylinder motor of the "T" head type, with the cylinders cast in pairs. Either a selective or planetary transmission as desired is installed with a three-point suspension. The frame is of wood, armored with angle iron. A feature of the cooling system is a sectional radiator which is demountable. No mechanical changes have been made in the Martin 1,000-pound wagon which mounts a double-opposed motor built into a unit power plant with the planetary change gear and jack shaft. The cylinders are arranged fore and aft of the car, reactionary side thrusts on the frame thereby being eliminated. Final drive is by means of double side chains.

A neat and original provision in the entirely new commercial cars, built by the Cortland Motor Wagon Co., is a simple foot control for the two-speed planetary transmission and the brake, with which it is impossible to put more than one pedal in operating position at one time. An interlocking device causes the immediate release of any engaged pedal when another is touched and prevents the brake from being applied when the gear is on high, or likewise from low to high, low to brake,



EWING MODEL B 500 LBS. DELIVERY WAGON



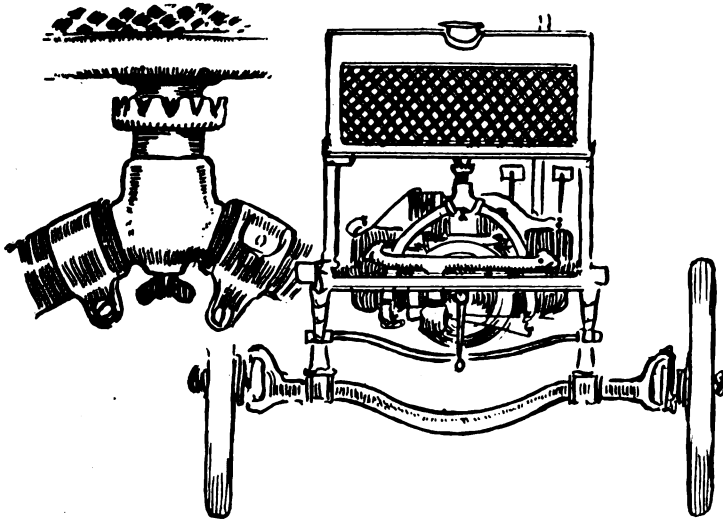
OLIVER 1200 LBS. SCREEN TOP DELIVERY WAGON

brake to reverse, etc. The motor is a 16 horsepower double opposed, furnished either air cooled with flywheel fan, or water cooled with thermo-syphon cooling system. The frame, which is of wood, steel reinforced, is suspended by full elliptic springs in front and a full platform in the rear. The wheels are 36 inches and the wheel-base 84 inches. Beside a chassis there are shown a standing top body, a flare side, full

plant, the valves in question are unseated by means of lifting pins, which are adjusted from below by means of wing nuts.

The change gear unit, which is of the selective sliding type affording three forward speed changes, may be removed by releasing the hinged bearing caps which support the ends of the countershaft, removing the chains and loosening the bearing supporting the front end of the driving

working. The Bosch magneto, which is standard equipment, is mounted on top of the engine, and is accessible either from the front or from under the floor boards. The driver's position is on the left side of the vehicle, the control being of the standard order with the important exception that the clutch pedal and gear-shifting lever are inter-connected by an ingenious bit of mechanism whereby shifting the lever without disengaging the clutch is prevented. The car is equipped throughout with ball bearings, all parts are inter-changeable and are made at the Penn-Unit Co. factory, and the solid tires used are of 36 x 40 x 2½-inch dimensions.



PENN-UNIT REMOVABLE ENGINE AND WATER CONNECTION

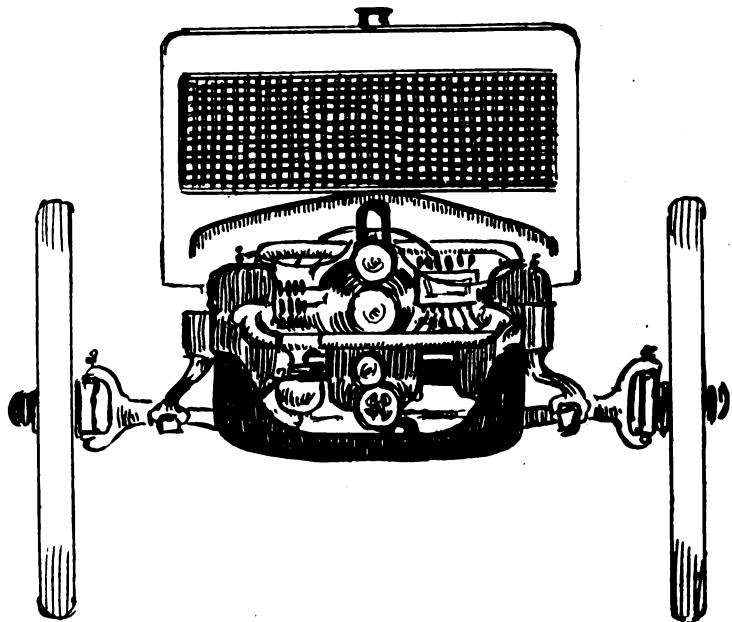
panel, with drop tail gate, and an enclosed station bus with plate-glass windows that lower into the sides.

One of the new commercial products of the light car type which possess a number of notable features is the Penn-Unit, which is made by the Penn-Unit Car Co. The unit feature is secured by fashioning the engine and change gear systems in independent groups, either of which may be demounted without disturbing the other. Both display features which are distinctive. The motor, which is of the double opposed type, is carried at the very front of the car directly beneath the radiator. It is a complete unit back to and including the Hele-Shaw clutch. Its three-point support is derived from an anchorage to the frame on each cylinder head and a trunion bearing surrounding the driving shaft back of the clutch. By releasing the fastenings on the cylinder heads and turning a pair of cam devices, a pair of rollers are brought into contact with a pair of guides, thereby lifting the weight of the engine and enabling it to be drawn forward. The use of the rollers renders the operation easy enough for one man to accomplish without difficulty. In disconnecting the engine unit, it is necessary only to break the gasoline and water connections; the latter, which are of very large size as becomes an efficient gravity cooling system, being coupled to the radiator by a special arrangement which includes a check valve on the radiator side of both inlet and outlet pipes. When the connection has been made, after replacing the

shaft sufficiently to permit the shaft to be withdrawn from the clutch coupling. This operation, like that of dismantling the

Victor trucks, while relatively new, and brand new as far as the show is concerned, by no means are untried or underdeveloped in construction. The single model shown is of 2½ tons capacity, built with the driver's seat above the engine in order to secure the full body length for loading purposes. This particular feature is optional with the purchaser, however, as the more conventional placing of the driver's seat back of the motor also is used on some of the numerous models which the Victor Motor Truck Co. produces.

The Geneva Wagon Co., manufacturing automobiles for the first time this year, shows a very full panel body at \$1,350, and a stripped chassis which discloses a wooden

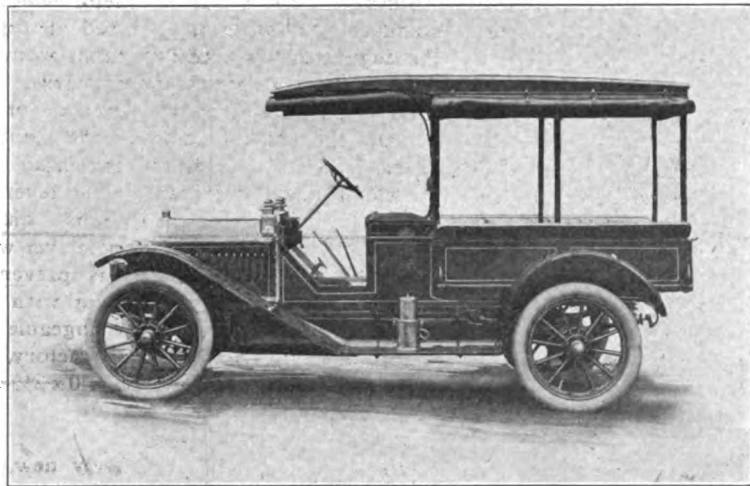


GENEVA POWER PLANT MOUNTING SHOWING ACCESSIBILITY

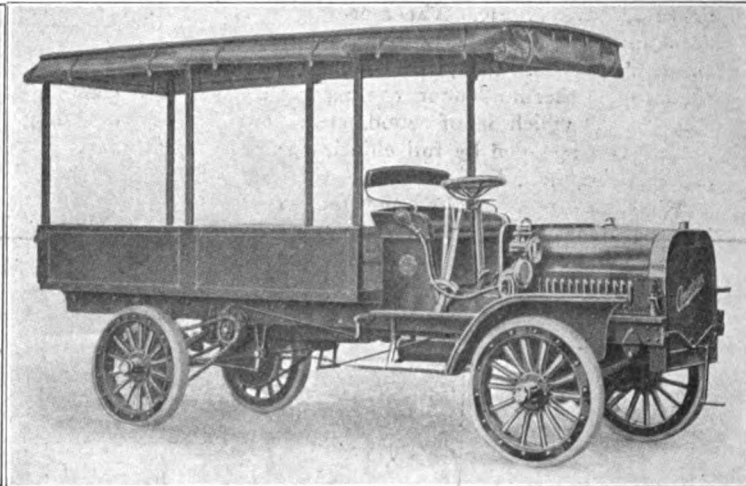
motor, may be performed in a very short time.

In respect to accessibility it should be remarked that the carburetter is placed at the very front of the machine, as is the oil-filling pipe to the engine base, the latter being of such a height that when it is filled just to overflowing, the system contains the right amount of lubricant for proper

frame with double truss rods and shows to great advantage the accessibility of the various parts. The motor, a 20 horsepower, two-cylinder opposed with cylinders, 5¼ x 4½ inches, is water cooled. The clutch is a special design disk type, and the transmission is planetary, with two speeds ahead. The engine is hung low, over the front axle and the radiator, rising back of it,



WARREN-DETROIT 1000 LBS. TOP DELIVERY WAGON



AMERICAN TRUCK WITH HEAVY EXPRESS BODY

forms the dash. An open express type also is made, selling for \$1,300.

An engine and transmission constructed as a readily removable unit characterizes the Oliver chassis. This unit may be removed with no more labor than that entailed by removing a bolt at each end of the engine supporting cross member, and a couple of nuts from a strap on the transmission case, resting on another cross member of the frame. Of course, the gasoline piping and foot pedals must be disconnected. Other features of the Oliver Motor Car Co.'s wagon are a three-point suspension, and the use of two torque bars, one on each end of the axle near the spring seats and connected with the main side member of the frame which is beside it. The motor is water cooled, has two cylinders, 5 x 5 inches, opposed, and it is mounted under a hood at the front.

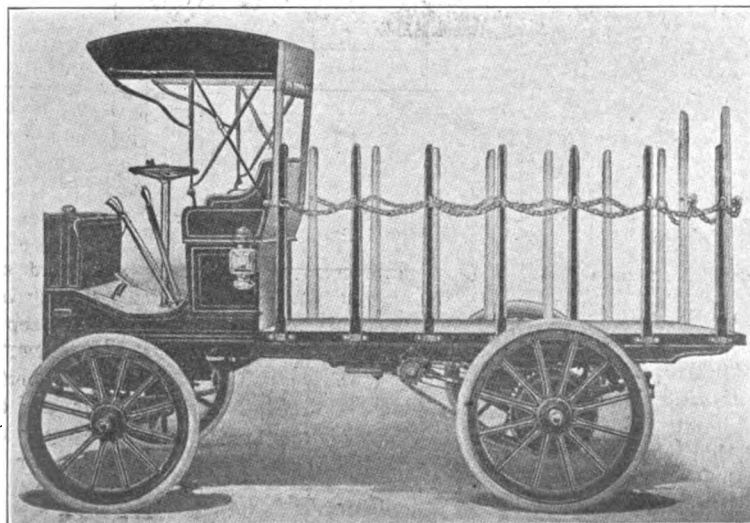
The American trucks, which are manufactured by the Lockport American Truck Co., are of the massive and approved pattern which inspires confidence in their stability and, in this instance, is representative of unquestionable durability. As in the

past, the planetary type of change speed gear is used, save in one model, on which the purchaser is given the option of this or the selective sliding gear type. Four cylinder vertical motors mounted under the driver's cab, double ignition, automatic lubrication, adequate brakes and very heavy frames are other features. The single electric model shown, which is the only electric car in the show, is the first of its class to be exhibited by the American company, though not the first built, as such machines have been produced on order for several years. The general chassis construction is much the same as that of the gasoline trucks, the double motor equipment and battery and the absence of the gasoline motor being about the only differences. In the way of battery, either the lead or nickel-iron types will be supplied at the customer's option.

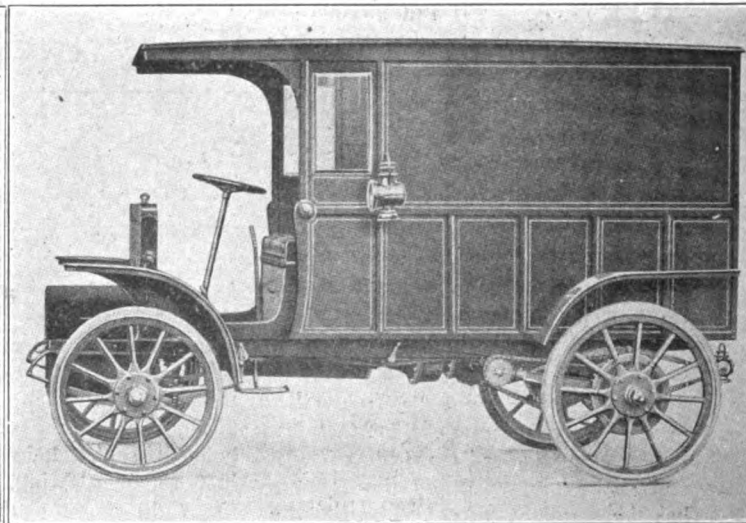
The Atterbury Motor Car Co.'s line of Buffalo trucks, exhibited for the first time in the Palace, though well and favorably known, reveal considerable improvements in general construction and in the appearance of serviceability which they present. In such features as finish, fitting and equip-

ment they have been brought more nearly into line with the class of high grade commercial machines. Spring suspension for the radiators, selective sliding gears on the 1,500 pound models, jack shaft brakes as well; multiple disk clutches on the two and three ton models and roller bearing steering knuckles in the three ton size, constitute the principal refinements.

One of the relatively few concerns which have prospered and increased in strength when committed exclusively to the commercial vehicle field is the Gramm Motor Car Co., formerly of Bowling Green, O., but which is just getting settled in its new and larger factory at Lima in the same state. Of the two new models which just have been added to the line only the larger, the five ton chassis—the largest yet produced—is on view. In point of design it represents practically nothing more nor less than an enlargement of the smaller types which already are well known. It is distinguished by the massiveness of its parts, however, clear through from the huge roller bearing mounted steering knuckles to the frame, wheels, brakes, and even the big ratchet on the sprag or "hill pawl," as



PENN-UNIT 1500 LBS. DELIVERY WAGON



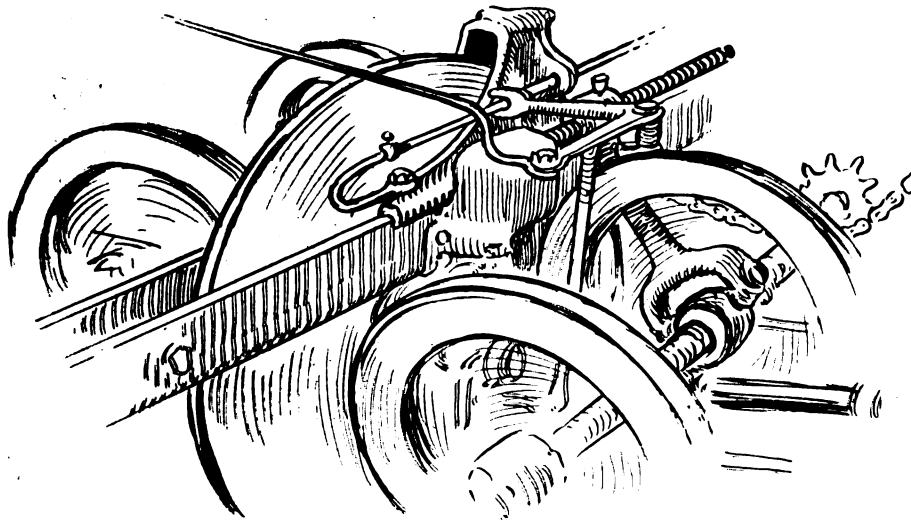
GENEVA 1000 LBS. PANEL TOP DELIVERY WAGON

it sometimes has been called. Three-point suspension of the engine and selective sliding change gear, multiple disk clutch with retarding device to check spinning when the clutch is disengaged, spring radiator mounting and roller bearings for the spring supports on the frame instead of the more common shackles, are the principal features which distinguish the line. The last named, by the way, is original and is claimed to be exclusive.

A double friction transmission is the feature which makes the truck built by the

one speed on the reverse. But one lever is used to operate the transmission, so the wheels are adjusted in order that in the neutral position of the lever none of them touch the disk. The forward driving wheels make contact with the disk when the lever is moved ahead, and the reverse wheels are drawn farther away; when it is moved back the opposite is brought about.

Another important feature is the means for equalizing bearing pressure in all transmission bearings. The pull of the chains on the individual shaft bearings is in an opposite direction from the pressure applied



THE SEITZ SYSTEM OF FRICTION TRANSMISSION

Seitz Automobile and Transmission Co., stand out from its rivals and this form of transmission, of course, eliminates both clutch and gears. The jackshaft and friction wheel shaft bearing are also unique in that they are not only roller bearings, but are contained in ball sockets. In the transmission there are two friction wheels making contact with the friction disk at the same time and at the same point, but from diametrically opposite directions. Force applied in this manner, therefore, eliminates end thrust and side pressure on the disk and the shaft bearings.

The friction disk is about one-half an inch thick and mounted on one end of a separate shaft, the other end of which is connected through a flexible coupling to the engine flywheel. Two pairs of friction wheels are mounted on separate shafts from the main frame, and are set at right angles to the friction disk shaft. A single combination of levers forces two wheels in contact with the disk, but on opposite sides, and with equal pressure. The disk is allowed about one-quarter inch end play for self adjustment. A heavy cross arm connects the forward driving wheels and keeps them in the same relative position on their shafts, and they are so mounted that they may be slid forward and back simultaneously for a change of speed.

The reverse wheels are rigidly mounted, as it is seldom necessary to use more than

by disk contact, this pull equalizing the pressure. A similar arrangement is made for the reverse drive.

The friction disk and shaft coupling connecting the disk with the flywheel and crankshaft are original and of peculiar construction. Set flush with the rear axle and within the flywheel are six studs parallel to the shaft, and each an equal distance from the center. The other member of the coupling carries six spoke-like arms with forward projecting studs, which are set at a shorter radius than the studs on the flywheel. Between these studs a leather belt is interlaced which transmits the power from the crankshaft to the propeller shaft, and, as the belt "gives," sudden jerks or strains are eliminated.

The description of the transmission gives the idea of control; the speed control being by foot pedal after the lever has been pushed ahead into high or pulled back for reverse.

At the Seitz stand there are on exhibition a three-ton truck, a 1,500-pound delivery and demonstrations of this friction transmission are made in a three-ton chassis connected to an electric motor for this purpose.

The motor for the three-ton size is 40-45 horsepower, four-cylinder vertical, with cylinders cast in pairs. The frame is of steel, and the springs are semi-elliptic in front and platform in the rear. The

wheels are 36 inches in front and 36 inches dual in the rear, and the wheelbase is 124 inches.

The 1,500-pound delivery is similar in detail of chassis, but the motor is smaller, developing 22 horsepower, and the construction is lighter. A single chain direct from countershaft sprocket transmits the power to the rear axle. The springs are semi-elliptic all around, the wheels are 32 inches and the wheelbase 96 inches

Cass trucks are among the newcomers. The single car shown by the Cass Motor Truck Co. is designed along generally standard lines with four cylinder vertical motor mounted under a hood in front, sliding gear transmission, affording two forward changes of speed, and double chain drive. Special features in its construction which are emphasized are the three-point suspension of the motor, thermo-syphon cooling, extra long semi-elliptical springs in front and platform rear suspension with auxiliary coils to take up extra loads and shocks, and two independent sets of equalized brakes. In fact, the machine is one of the most symmetrically designed of the several vehicles in the Palace which come into the one-ton category.

The Saurer trucks, Swiss, which always have been distinguished by a number of original and useful characteristics, are shown in two chassis and one large rack body which bears the sign of the Bush Terminal Co. The mechanism of the vehicles is rendered conspicuous by its inclusion of compressed air starting and compressed air braking features; the latter advantage being gained by virtue of a special valve mechanism which permits the main engine to be converted temporarily into a two-cycle air compressor for purposes of retardation when the throttle lever is swung past the point of full throttle closure. On the smaller chassis the use of inverted hour-glass helical springs of the supplementary class is conspicuous.

To its line of pleasure cars made by the H. H. Babcock Co. has been added a commercial car of 1,000 to 1,500 pounds capacity, the chassis of which is exhibited in the truck department in the balcony. It mounts a two-cylinder opposed motor of 20 horsepower, cooled by the thermo-syphon system. The clutch is of the multiple disk type and the transmission selective, allowing three speeds ahead. Semi-elliptic springs are used in front, and a three-quarter platform supports the rear. The wheels are 36 inches, and the chassis has a wheelbase of 100 inches.

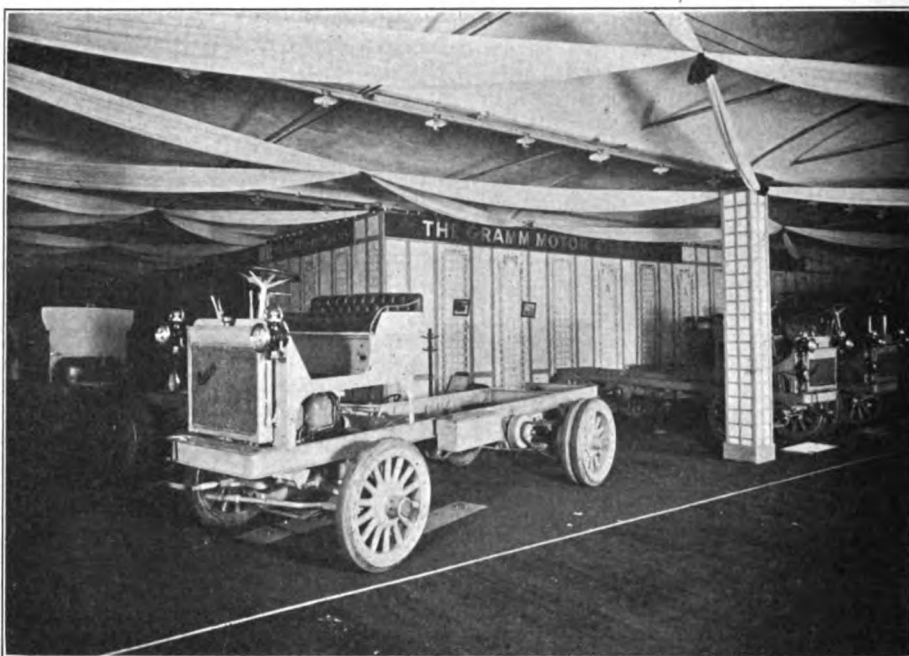
The wagon shown by the International Harvester Co. is distinguished from other cars by the original control system which is unusual in that the transmission control centers in one lever. The magneto is gear

driven instead of depending upon the friction of the flywheel for its actuation. An air-cooled, 20 horsepower motor, double opposed, is suspended after the usual manner on a steel sub-frame under the body. Two belt-driven fans assist in the cooling of the cylinders. A top delivery, an open delivery and a stripped chassis are the cars that are displayed.

A transmission of the three-speed selective type which has a three-point suspension, the Bosch high-tension dual ignition system and a variable oil level are features to be found in the Moeller truck made by the New Haven Truck and Auto Works, and in which, by carrying of part of the load on the front wheels, tire wear is claimed to be reduced and all overhang in the rear is avoided. The mechanical changes for this season include a longer wheelbase, one of 138 inches, a heavier frame, a new carburettor and the use of a multiple disk clutch. The truck is made in two models of five-ton capacity each, and the chassis are identical with the exception of the wheelbase. A feature of the other model, which is not shown, is the self-hoisting body. The motor equipment is a four-cylinder vertical engine, cast singly and developing 32.3 horsepower. The transmission is amidship of the truck, and the drive is through a differential to double side chains.

One of the most substantial-looking machines and one of the class that has been in service long enough for its properties to have become fairly well known is the Monitor, which the Flanagan Motor Car Co. is exhibiting as agent for the manufacturers. Although but one model, the A type is shown, a second is said to be already on the road and is promised for display later during the present show season. Monitor construction is of the conservative and tried order, including opposed motor, planetary change gear, and a method of arrangement of the mechanism which provides a maximum of carrying space for the wheelbase. To this end the motor is carried beneath the seat, and all mechanism is placed under the plane of the frame. The forthcoming model, it is explained, is to be of slightly larger power and capacity, and will have a number of improved features not embodied in the effective-looking little car on view sufficient to justify the difference in price.

Arriving at the show so late that the visitors who came and went during the early part of the week saw only an empty booth, the Maytag, which is produced by the Maytag-Mason Motor Co., is well worth taking into consideration in the class of delivery vehicles for the reason that it is built to satisfy the requirements of the small tradesman in particular. Of the various styles built and exhibited, the double-purpose car, is particularly referred

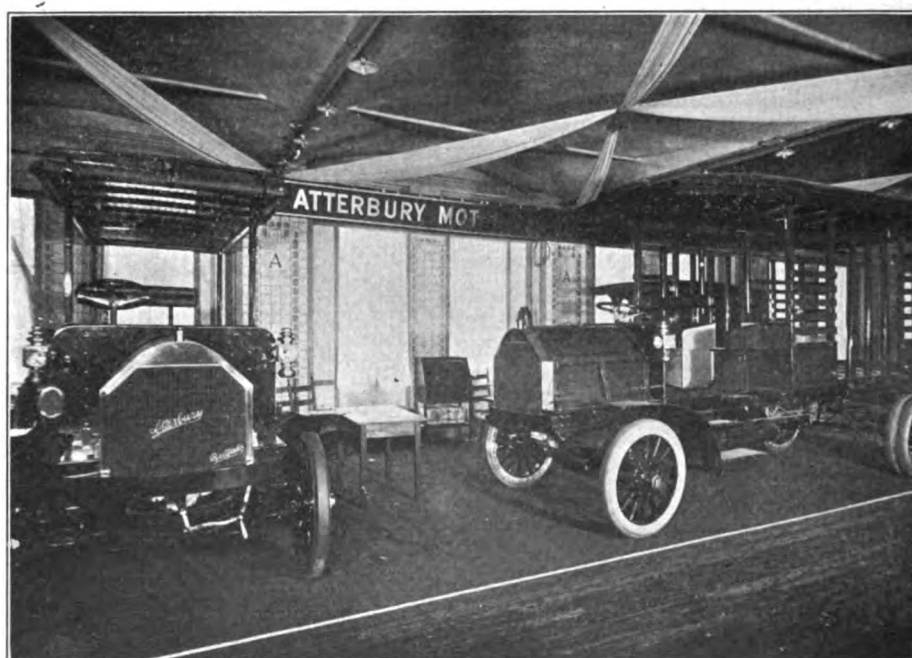


SOME OF THE TRUCKS THAT GRAMM MAKES

t, it being designed for business purposes six days in the week and pleasure purposes one, or vice versa, as occasion may require. The car is built with inter-changeable bodies, it should be explained, the experience of the Mason and Maytag companies in building machines of both types rendering the manufacturer well able to produce a satisfactory proposition from either point of view, or both, for that matter. Maytag construction includes the use of the opposed type of motor, placed under the chassis with the cylinders lying lengthwise of the car, planetary change gear and single-chain drive to the rear axle. As the price of the single chassis with two bodies is but \$1,250, it is evident that the

outfit is well worth the consideration of the class of buyers for which it is intended. Other types, of both higher and lower prices and carrying capacities, also are made. This is the first appearance of the product in the East.

The Johnson Service Co., in addition to its line of pleasure cars, builds a rather imposing array of commercial vehicles, of which no less than three distinct types are to be seen at the Palace. The smallest of these is of the light-delivery type, with engine carried under a hood in front. The other two are of the heavier order, with engines, likewise of the four-cylinder, vertical pattern, mounted in a special compart-



TWO "BUFFALO" TRUCKS SHOWN IN THE ATTERBURY EXHIBIT

ment under the driver's seat. One constructional feature of which the builder is particularly hopeful is the engine governor, which acts on the throttle and automatically restricts the speed to 1,000 revolutions

per minute. As the governor casing is closed and locked, there is no chance for the driver who is so disposed to be able to make faster running speeds than the mechanism is designed to stand by tampering with the regu-

lator. Motors, change-speed gears, axles and other parts of the Johnson product are designed and made by the company, and hence reveal not a few points of individuality.

Summary of the Commercial Vehicles at the Palace Show and of Their Chief Characteristics

American Motor Truck Co., Lockport, N. Y.—Two American trucks; one 4-cylinder, 45 horsepower, water-cooled, chain-driven, two-ton gasoline truck, and one 3½-ton electric truck. Features of gasoline truck: Three-point suspension of both engine and transmission units. Mechanical changes: On Model M, two-ton, 38-inch wheels front, 42-inch wheels rear; larger oil reservoir in engine; option of three-speed selective transmission on all models. Price range, \$1,400-\$6,000.

American Motor Truck Co. of Michigan, Detroit, Mich.—One 2-cylinder, water-cooled, chain-driven, gasoline one-ton truck. Features: Four-wheel drive; front and rear wheel steering; radiator forms dashboard; planetary transmission. Price range, \$1,400-\$3,500.

Atterbury Motor Car Co., Buffalo, N. Y.—Three Buffalo 4-cylinder, chain-driven, water-cooled trucks. One three-ton, 50 horsepower truck; one 1½-ton, 30 horsepower truck, and one 20 horsepower delivery wagon. Features: Spring suspension on all radiators; folding starting crank; removable sprocket rings. Mechanical changes: Selective sliding gear—three speeds and reverse on all 1,500-pound cars; jackshaft brakes added on all 1,500-pound cars, multiple disk clutches on all two and three-ton cars; roller bearings in steering knuckles on all three-ton cars. Price range, \$1,600-\$4,500.

Babcock Co., H. H., Watertown, N. Y.—One 1,000-pound, 2-cylinder, 20 horsepower, water-cooled delivery wagon. Features: Two-cylinder opposed water-cooled motor; Bosch high-tension ignition; three-speed selective transmission. Price range, \$1,400-\$1,650.

Beyster-Detroit Motor Car Co., Detroit, Mich.—Two Beyster-Detroit 4-cylinder, 20 horsepower, water-cooled, chain-driven trucks. Two 1,500-pound delivery wagons. Features: Electric lights; flywheel carried in front of engine; planetary transmission; direct drive obtained with hand lever; fixed ignition. Mechanical changes: Size of wheels increased. Price range, \$1,150-\$1,250.

Cass Motor Truck Co., Port Huron, Mich.—One Cass truck. One 4-cylinder 30 horsepower, chain-driven, one-ton truck. Features: Four-cylinder motor with magneto ignition; three-point suspension of motor; thermo-syphon circulation; oil level in crankcase maintained by pump; driver's seat behind motor; extra long springs insure easy riding; rubber bumpers on front axle; auxiliary coil springs on rear axle; two independent sets of equalized brakes acting direct on rear wheels in combination with side chain drive. Price range, \$1,950-\$2,600.

Chase Motor Truck Co., Syracuse, N. Y.—Four 3-cylinder, 2-cycle, air-cooled, chain-driven trucks. Three 20 horsepower delivery wagons and one each two-ton, 30 horsepower truck and chassis. Features: Two-cycle, air-cooled motor; 42-inch wheels in rear. Mechanical changes: Axles strengthened and capacity of wagons increased from 1,500 pounds to one ton. Price range, \$750-\$1,250.

Cortland Motor Wagon Co., Cortland, N. Y.—Three Cortland 2-cylinder, 16 horsepower, chain-driven trucks. Two delivery wagons, one bus and one chassis. Features: Patented interlocking foot control; radius rod and brake combined in unit; jackshaft and spring hangers combined in unit. Mechanical changes: Foot control in place of side lever control; motor equipped with magneto giving dual ignition; air or water-cooled motor at purchaser's option; axles enlarged; tires enlarged. Price range, \$1,100-\$1,325.

Chicago Pneumatic Tool Co., Chicago, Ill.—Three Little Giant commercial cars. Three 2-cylinder, 20 horsepower, water-cooled, chain-driven delivery wagons and one chassis. Features: Interlocking system of change speed; extra strong but light frame; accessibility of complete machinery; parts absolutely interchangeable and numbered. Mechanical changes: Two sets of brakes; side lever and refinement of connecting parts. Price range, \$950-\$1,100.

Coleman Motor Car Co., Ilion, N. Y.—One Coleman 2-cylinder, 20 horsepower, air-cooled, chain-driven gasoline delivery wagon. Features: Short turning radius; open footboard; large tank capacity. Mechanical changes: Carrying capacity increased; emergency brakes added on jackshaft; tire sizes enlarged. Price range, \$1,200-\$1,250.

Findlay Motor Co., Findlay, Ohio—Two Ewing commercial cars. One 4-cylinder, 35 horsepower, water-cooled, chain-driven delivery wagon, and one 2-cylinder, 16 horsepower, water-cooled, shaft-driven delivery wagon. Features: Thirty-five horsepower, L-head motor; high-tension ignition; multiple disk clutch; selective transmission. Price range, \$950-\$2,000.

Flanigan Motor Car Co., Brooklyn, N. Y.—One Monitor 2-cylinder, 24 horsepower, water-cooled, shaft-driven, one-ton truck. Features: Motor under footboard; radiator forms dash; planetary transmission; Remy magneto. Mechanical changes: Twenty-four horsepower motor; selective transmission; cone clutch; heavier springs and wider frame on model B. Price range, \$1,400-\$1,600.

Geneva Wagon Co., Geneva, N. Y.—Two Geneva 2-cylinder, 20 horsepower, water-cooled, shaft-driven commercial cars. Features: Radiator forms dashboard; opposed motor; two-speed planetary transmission. Price range, \$1,300-\$1,350.

Gramm Motor Car Co., Bowling Green, Ohio—Six Gramm 4-cylinder, water-cooled trucks. One one-ton truck, two two-ton trucks, one three-ton truck, two five-ton trucks. Features: Three-point suspension of engine and transmission; selective sliding gear transmission (models 3 and 5 have four speeds forward and one reverse); Gramm multiple disk type clutch; radiator suspended from dash with coil springs; extra large internal brakes, completely housed; frame of channel steel. Mechanical changes: Unit power plant in model 1; selective transmission on models 3 and 5; three-

point suspension throughout. Price range, \$1,800-\$4,500.

Hartman Sales Agency, L. M., York, Pa.—Three Hart-Kraft water-cooled, chain-driven commercial cars. One 2½-ton, 4-cylinder, 30 horsepower truck; two 2-cylinder, 16 horsepower delivery wagons. Features: In delivery wagons, full elliptic springs front and rear; three-point suspension and radiator suspended on enclosed spiral springs on two models. Price range, \$1,175-\$2,060.

International Harvester Co. of America, Philadelphia, Pa.—Two International 2-cylinder, 18 horsepower, air-cooled, chain-driven trucks; two delivery wagons and one chassis. Features: Two-cylinder opposed air-cooled engine; magneto ignition; forced feed oil system; sliding-shaft transmission; phosphor and steel gears. Mechanical changes: Magneto driven by gears instead of by friction. Price range, \$850-\$1,000.

Johnson Service Co., Milwaukee, Wis.—Three Johnson commercial cars. One 4-cylinder, 40 horsepower, shaft-driven water-cooled, gasoline delivery wagon; one 4-cylinder, 40 horsepower, chain-driven, three-ton, gasoline truck, and one 4-cylinder, 50 horsepower, chain-driven, five-ton truck. Features: Governor on engine to limit speed; starting device on magneto to start without spinning crank; spring accelerator. Mechanical changes: Heavier axles; improved spring suspension; longer springs; copper gas tank; Bosch dual system ignition, latest 1911 type; more speed. Price range, \$1,600-\$3,200.

New Haven Truck & Auto Works, New Haven, Conn.—One Moehler 4-cylinder, 32.3 horsepower, water-cooled, chain-driven, five-ton truck. Features: Three-point suspension; Bosch high-tension dual system; self-hoisting body; variable oil level. Mechanical changes: Longer wheel base; heavier frame; new carburetter; new clutch. Price, \$4,500.

Martin Carriage Works, York, Pa.—Two Martin chain-driven, water-cooled commercial cars. Two 2-cylinder, 18 horsepower delivery wagons, and one 4-cylinder, 36 horsepower, three-ton chassis. Features: Engine jackshaft equalizing gear is a complete unit on three-point suspension, which eliminates side thrust; third-chain power is transmitted to jackshaft by direct spur gear. Price range, \$1,400-\$3,500.

Oliver Motor Car Co., Detroit, Mich.—Three 2-cylinder, 25 horsepower, water-cooled, shaft-driven commercial cars. One chassis and three delivery wagons. Features: Removable unit power plant; floating type rear axle; multiple disk clutch and Mea magneto. First time exhibited in New York. Price range, \$1,400-\$1,600.

Otto, Albert L., New York City—Two Saurer 4-cylinder, 37 horsepower, water-cooled, chain-driven trucks. One 4½-ton truck, one six-ton truck and one chassis. Features: Selective transmission; straight line drive; brakes on jackshaft and rear wheels; pressure-fed gasoline system; transmission and differential in same

housing; compressed air starting device; air brakes. Price range, \$4,500-\$6,000.

Penn-Unit Car Co., Allentown, Pa.—One Penn-Unit 2-cylinder, 20 horsepower, water-cooled, chain-driven truck. One 1,500-pound truck and one chassis. Features: Unit power plant; straight line drive; three-speed selective transmission; 40-inch rear tires; locking device on chain speed lever; left-hand drive. Mechanical changes: Valveless oil pump; Hele-Shaw clutch; individual-sight oil

feed; Bosch ignition, gear driven. Price range, \$1,800-\$2,000.

Victor Motor Truck Co., Buffalo, N. Y.—One 4-cylinder, 30 horsepower, water-cooled, chain-driven, 1½-ton truck. Features: Seasoned ash frames reinforced with steel; selective transmission; leather-faced cone clutch. Mechanical changes: Radiator made heavier and hung on springs. Price range, \$2,500-\$4,500.

West Side Garage & Motor Co., New York City—Two Seitz 4-cylinder, water-cooled,

friction-driven trucks. One three-ton truck, one 22 horsepower delivery wagon and one three-ton, 45 horsepower chassis. Features: Double friction drive; no clutch or gears; self-aligning bearings. Price range, \$1,200-\$3,500.

Warren Motor Car Co., Detroit, Mich.—One 4-cylinder, 30 horsepower, water-cooled, shaft-driven delivery wagon. Features: Block motor; selective sliding gear transmission; equalized brakes. Price, \$1,300.

The Meagre and Much-mixed Accessory Display at the Palace

In dealing with the accessory display at the Palace it is necessary to be charitable—extremely charitable. While those familiar with the state of affairs that existed were well aware that accessories would be few and far between, they are fewer and farther between than even they anticipated would be the case. In the skimmed array that is in evidence, there is little that is novel or of much interest, and, generally speaking, the exhibitors are of recent origin and of modest size and resources who undoubtedly fancied that their exhibits at the show would assist in starting them on the road to fame and fortune. Not one of them is even fairly well known to the trade or public, and they are thrown promiscuously with exhibits of "handy" tools, polishing liquids and pastes, ivory carvings and postal cards, one or two household "necessities" and similar things—all of which might be exhibited with equal fitness at a furniture show, a horse, dog or cat show, or a sportsmen's exhibition.

In the field of demountable rims, for instance, there is but one novelty on view—the Bushey demountable rim, a neat-looking device of somewhat unusual construction, manufactured by the Bushey Demountable Rim Co., of New York City. The outward appearance is simple and free from projecting bolts and nuts, the only thing indicating the demountability of the rim being a single square shaft and the grip of the locking device. The latter comprises a cam which, when given a quarter turn with a crank, contracts or expands the circumference of the wheel pressing it with great force against the rim carrying the tire. Large studs and dowel pins slip into position automatically, while a leather strip covers the outer edge of the wheel, preventing the rim from rusting on the wheel. No tools excepting the crank are required.

There is but one exhibit of tires, but several of tire appliances. The Safety Tire Co., of New York City, is displaying a non-skid tire which makes its first appearance at a New York show, and in which the steel studs, instead of being raised as usual, are depressed into the rubber tread, giving the appearance of steel-rimmed holes in the tire. These holes fill with earth and grit, and are claimed to help prevent skidding, in addition to the non-skidding effect produced by the sharp edges of the submerged

studs, which edges are flush with the surface of the rubber.

A non-skid tread, adapted to being slipped over the regular tire, is being exhibited by the Economy Tread Co., of New York City. It is made of three-ply leather with steel studs. Besides complete treads the company shows patches of varying shape and size for emergency repairs on the road.

Tire repairing is also the object of the New Process Vulcanizer Co., of Toledo, Ohio, which demonstrates the advantages of its vulcanizing apparatus, a compact little appliance heated by alcohol, thus permitting of roadside repairs. It sells for \$12.50.

Sectional automobile radiators form the exhibit of the Behringer Radiator Works, of Ticonderoga, N. Y. They are so constructed that in case an accident causes a leakage in one of the tubes, the section of four tubes (one or more of which happen to be broken) may be removed and the two holes in top and bottom plugged up, thus permitting a lasting repair at a more convenient time and place. A feature of the exhibit is a giant radiator, 4 x 4 feet, which is one of a number manufactured for farm tractors. It is said to be the largest radiator made, and will hold over 18 gallons of water.

Recording gauges of all kinds, from those which merely show the level of water tanks or reservoirs to highly complicated instruments which keep hourly records of humidity, gas, air pressure, vacuum and draft are shown by the Bristol Co., of Waterbury, Conn.

Ignition devices which usually are present in great numbers at automobile shows are almost wholly lacking. The product of the Ball Multi Spark Plug Co., of Minneapolis, Minn., is almost alone in its glory. It is a spark plug in which the central electrode is topped by a steel ball $\frac{3}{8}$ of an inch in diameter, from which sparks jump in all directions to the circular ring-like electrode surrounding it.

Apart from the solitary spark plug the only thing of an electrical nature is contained in the exhibit of A. H. Green & Co., of New York City; it is a dynamo for the electric lighting of automobiles, which incorporates some unique features. It is a French invention marketed under the name "La Magicienne," and is handled by

the Magic Dynamo Co., of New York City. The chief advantage claimed for it is the arrangement of the governor which holds the flow of current to a constant strength regardless of the extreme fluctuations of the engine. The remainder of the exhibit consists of conventional styles of storage batteries, electric lamps and electric heaters.

Of windshields there are three, the most novel of which is exhibited by the Auto Necessities Co., of New York City. This shield is divided vertically in two halves, instead of horizontally as usual, and thus may swing down parallel to the hood, leaving a wholly unobstructed view; the brace rods also fold up and are out of the way. The glass does not interfere with the opening of the hood when in this position, and is guaranteed not to rattle in either position. Another windshield which, however, is neither folding nor of glass, forms the offering of the Auto Wind Deflector Co., of Brooklyn, N. Y. It is curved, of pantasote or leatherette and celluloid panels, with brass fittings, somewhat resembling a storm apron.

For the use of extra passengers the C. A. Buffington Co., of Berkshire, N. Y., offers folding stools and chairs, while the Ross-Heaton Mfg. Co., of Emporia, Va., shows a patented fastener with which to hold in place the window curtains of landaulets and town cars.

Pneumatic riveters and other pneumatic tools are displayed by the Chicago Pneumatic Tool Co., while the Standard Metal Works Co., of New York, shows a full line of brass intake and exhaust tubes. Non-slip rubber pads to cover the pedals on cars are offered by the American Pedal Co., of New York, and a varied assortment of conical side lamps, reflectors, mirrors, tire covers and celluloid windshields fills the space of the B. E. Mfg. Co., of New York. The Fabrikoid Works, of New York, shows an imitation leather for tops, storm aprons and upholstery, and in the space of the Dean Mfg. Co. there stands in solitude a four-cylinder "Fox" motor which is adaptable to both automobile and aeronautic use. Tires of the conventional sizes and shapes are shown by the McGraw Tire & Rubber Co., of East Palestine, Ohio, makers of Imperial tires, while in the space of the United States

McAdamite Co., of Brooklyn, N. Y., great chunks of metal, some cast in the shape of motor parts and others made into axle housings, spread out; the metal is McAdamite and is said to possess great strength and hardness combined with light weight.

Up in the second balcony, where aeroplanes and aeroplane accessories are in the foreground, there are a few firms which by some stretch of the imagination might be included in an automobile show. N. Finkelstein displays a new style of exhaust whistle, as well as a combination tool which appears simple and compact, although comprising 12 distinct and separate tools. He also shows a very simple gasoline gauge made by the Tanner Gauge Co., of Akron, Ohio, which only recently was patented and has never been shown in New York. Gas cylinders and tanks are shown by the American Metal Fusing & Cutting Co., of New York.

But there is one exhibitor on this balcony who has no more connection with an automobile than a Chinese coolie from Thibet; he displays the Wyko Vanity Box, containing face lotions and cream. And on the floor below is another who shows a full line of "ivory" carvings, said to be made in Switzerland. Experts in ivory, however, persist in calling the material from which they are made by the correcter name or casein—or dried milk. The full list of exhibitors is as follows:

American Metal Fusing & Cutting Co.—Gas cylinders and tanks.

American Pedal Co., New York City—Rubber pedals.

Auto Necessities Co., New York City—Vertically divided windshields.

Auto Wind Deflector Co., Brooklyn, N. Y.—"Ideal" wind deflector.

Ball Multi Spark Plug Co., Minneapolis, Minn.—Spark plugs.

B. E. Mfg. Co., New York City—Conical lamps, reflectors, tire covers and wind aprons.

Behringer Radiator Works, Ticonderoga, N. Y.—Sectional radiators.

Bristol Co., Waterbury, Conn.—Recording instruments.

Buffington & Co., C. A., Berkshire, N. Y.—Folding chairs and stools.

Bushey Demountable Rim Co., New York City—Demountable rims.

Chicago Pneumatic Tool Co., Chicago, Ill.—Pneumatic tools.

Economy Tread Co., New York City—Five treads.

Fulton-Zinke Co., New York City—Electric cables, lights, dynamos and one 4-cylinder Continental motor.

Fabrikoid Works, New York City—Imitation leather.

Finkelstein N., New York City—Combination tools, exhaust whistles, gasoline gauges.

Grady Mfg. Co., New York City—Polishes and polishing liquids.

Gregory Sales Co., New York City—Gas igniters.

Green & Co., A. H., New York City—

Storage batteries, electric headlights, sidelamps, etc.

International Correspondence Schools, Scranton, Pa.—Examples of teaching system.

McGraw Tire & Rubber Co., East Palestine, Ohio—Imperial tires.

Morgan Co., New York City—Cinch tire repair outfit.

Myers, A. J., Inc., New York City—G. & A. spark plugs.

New Process Vulcanizer, Toledo, Ohio—Alcohol vulcanizing apparatus.

P. C. W. Co., New York City—Tire irons, adjustable valve lifters and "anti sash rattlers."

Rapp Co., John W., College Point, L. I.—Steel bodies.

Rector Engineering Co., New York City—Tire inflator.

Safety Tire Co., New York City—Non-skid tires.

Standard Metal Work Co., New York City—Brass intake and exhaust tubes.

Stewart Automobile Academy, New York City—Instruction systems.

Sterling Machine & Stamping Co., Willington, Ohio—Suction sweepers and Sharp spark plugs.

Touring Club of America, New York City—Jones live map charts and license plate holders.

United States McAdamite Metal Co., Brooklyn, N. Y.—McAdamite metal castings.

Winn, Wm. R., New York City—Oils and greases.

Cascades and Rocky Canyon "Set Off" Los Angeles's Licensed Show

Surpassing in scenic beauty anything of the kind ever held in the West, the Los Angeles Licensed Dealers' show in Fiesta Park on December 24 opened its doors—or rather its tent flaps—to the great multitude waiting to view the wonders contained therein. For this show was held in a gigantic tent, in which the branches of genuine redwood trees pierced the sky overhead, where a little river crossed the tent from end to end, while ferns and rustic benches, moss and grass which carpet-like covered the ground, a rocky canyon from which a cascade tumbled scintillating in all the colors of the rainbow—all together formed a setting for the cars, which it would be difficult to duplicate in any other city.

When the switch was thrown on on Christmas eve, 24,000 electric lights blazed up in the great tent, and the throng of visitors paused at the entrance to the new wonderland hardly believing their eyes when they saw the beauty unfolded before them. And even while they still lingered near the entrance there came a terrific snowstorm out of the dark-blue sky overhead, and the fun began. For the "snow" was but confetti which lodged in hair, and face, and neck and everywhere.

But aside from the purely social and

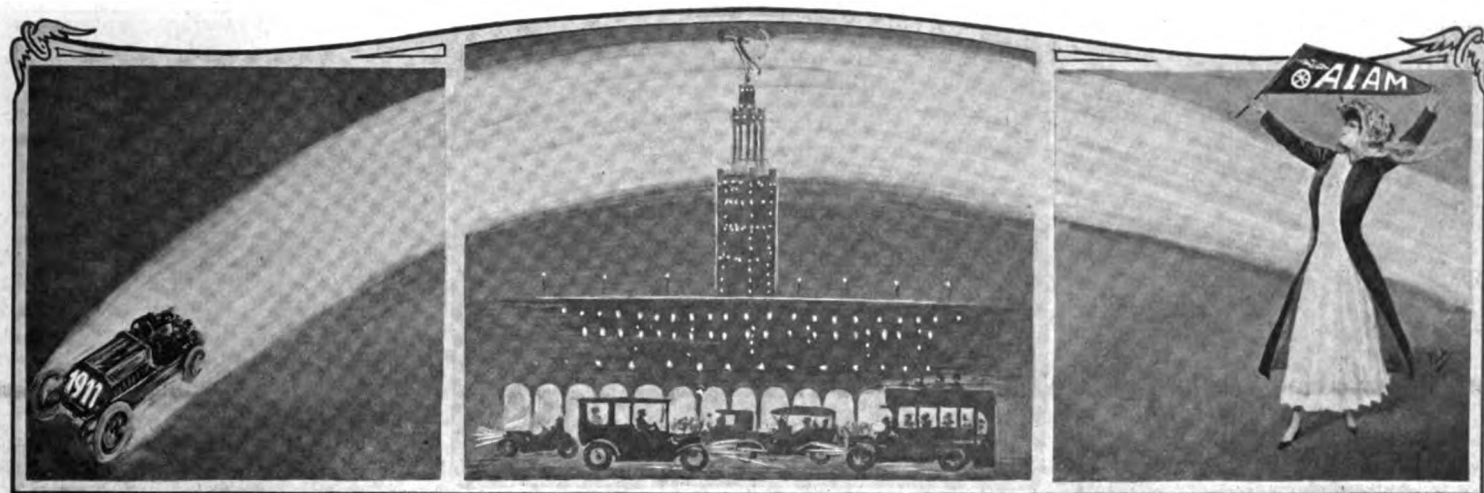
festival aspect of the exhibition, the Licensed show of 1910 will go down in Los Angeles history as the most successful ever held on the Pacific Coast. More than 200 pleasure cars were shown, while a large number of accessory exhibits filled the end opposite the entrance. Parallel to the oval tent in which the pleasure cars and accessories were staged, there stretched a smaller tent in which the commercial cars were exhibited. The show did not want for attendance during its week's run; it was worth seeing, and great crowds were attracted. The exhibitors were as follows: Howard Automobile Co.—Three Oldsmobile and eight Buick cars; Golden State Garage—Two Simplex cars, one Simplex chassis and one Palmer-Singer car; Eastern Motor Car Co.—Four Stevens-Duryea cars and one Stevens-Duryea six-cylinder chassis; Pierce-Arrow Agency—Two six-cylinder Pierce-Arrow cars and one single-cylinder 1900 model; Shafer-Goode Motor Co.—Six Glide cars, one chassis and one Glide truck; Big Four Auto Co.—Three Regal cars and one chassis; Nash & Fennimore—Four Lozier cars; Woolwine Motor Car Co.—Three Carter cars and one chassis; Ralph C. Hamlin—Eight Franklin cars; Tri-State Auto Co.—Four Hupmobile

cars and one chassis; Wm. R. Ruess Automobile Co.—Three Pope-Hartford cars and one chassis; H. O. Harrison Co.—Three Peerless cars and two Everitt cars; C. H. Thompson—Five Jackson cars and one Jackson delivery wagon; Premier Motor Car Co.—Four Premier touring cars and one chassis; Elmore Motor Car Co.—Three Stearns cars, three Elmore cars and two Ohio electrics; Leon T. Shettler—Two Aperson and three Reo cars; Greer-Robbins Co.—Five Mitchell cars and one chassis; Los Angeles Motor Car Co.—Four Locomobile cars and one chassis; Lord Motor Car Co.—Three Flanders cars, two E-M-F cars, two Studebaker electrics and two Garford cars; Thomas-Mercer Motor Car Co.—Three Thomas cars and one Thomas chassis, and three Mercer cars and one Mercer chassis; California Electric Garage Co.—Six electric coupes, one victoria, one stripped chassis and one delivery wagon; Doerr-Brown Co.—Four Knox cars and one Knox truck; United Car Co.—Four Columbia limousines and eight Maxwell cars; Renton Motor Car Co.—Seven Overland touring cars; Western Motor Car Co.—Five Chalmers cars and one Chalmers chassis and five Hudson cars and one Hudson 33 chassis.

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LEADING FIGURES IN THE AMERICAN AUTOMOBILE INDUSTRY





Greatest of Licensed Shows in Readiness

Each year since the year 1900, Madison Square Garden, New York, has contained an automobile show which in the light of its day was a great show. Each was greater than the one before, and perhaps it is but natural progression that the eleventh of the series, which will be inaugurated in that superb structure Saturday evening next, 7th inst., should hold abundant promise of being greater by far than all of the others; it cannot well escape such fame. For during the past twelve-month the Association of Licensed Automobile Manufacturers itself, which, for the sixth time, will conduct the show, has grown greater and added immensely to its power.

Practically all of those who a year ago constituted the American Motor Car Manufacturers' Association now are enlisted under the Selden flag—the flag of the A. L. A. M.—and on Saturday next will make their first public appearance—in the sense of a public exhibition—under Selden auspices. There are 37 of them, and, added to the older members of the organization, they will present no fewer than 67 separate exhibits of gasoline pleasure cars to which Part I of the show—the first week—will be restricted. Pleasure will give way to business the following week, when the commercial vehicles constituting Part II will hold the boards. In addition to the 67 car exhibits, there will be 326 separate displays of accessories, a total of 393. Last year there were 323, of which 54 were of cars, 246 of accessories and 23 of motorcycles. The year's growth and the increased greatness of the forthcoming show is therefore apparent.

As was the case last year and the year before, Col. George Pope, chairman of the A. L. A. M. show committee, and Merle L. Downs, secretary, have borne the great burden of preparation, with President Charles Clifton and General Manager Alfred Reeves as chief advisers and assistants.

The preparations, too, have been of the sort in keeping with the show since the Association of Licensed Automobile Manufacturers assumed its care and conduct and instituted the system of uniform decoration on a scale never before attempted by promoters of industrial displays. The general effect of the decorative treatment of the main floor will be that of a mammoth latticed garden. Lattice construction will be employed on every side, and will give to the building an out-door appearance. White and gold will be the dominant colors, although green and crimson will be strongly in evidence. The girders of the big dome will be screened by a canopy of eight thousand yards of fluffy blue cloth amid which myriad incandescent lamps will twinkle. The exhibiting spaces will be carpeted with a specially woven fabric of light green hue to represent grass. Ornamental lamp sign-posts will mark the car exhibits.

Entering the arena from the foyer the visitor will be confronted with a former acquaintance, slightly revised, a Roman pergola fountain, and also will he meet old friends, the Swiss guards who have done duty at previous shows. In the general view there will be three balconies in the rear and front and two on either side of the interior. The Garden will be lighted in a manner never before attempted, which will show the exhibits to their best advantage.

One of the novel decorative features will be found in the "exhibition hall," which will be transformed into a Roman garden. Here the cars will be displayed under a big pergola, covered with trailing vines of wistaria. A big painting depicting a picturesque section of the Riviera will extend about the entire length of the four walls of the room.

An entirely new decorative effect will be found in the Concert Hall, where the displays will be shown under rustic bowers.

The basement will have a rathskeller of a design typical of those found in England.

Although no aeroplanes will be exhibited, and no striking flights of fancy expressed in mechanical form are to be expected, the Garden show will reveal numerous features which will be out of the usual. Not a few of them will be new; some will be novel, and others will be old in the sense that they have been seen at former exhibitions, but all will be of the tried and true type, and therefore worthy of attention.

Among other features, one of the most notable at a Licensed show will be the Knight motor exhibited in a Mercedes car. For several years the inventor of the system has looked forward hopefully to the day when a slide valve motor would be seen in a Garden show, and though it is not wholly a secret that several American manufacturers have experimented with Knight valves and valves of the Knight type, and there have been intimations that one or more may be disclosed there is no certainty on the point, but its disclosure will cause no great surprise. The foreign Mercedes, however, is the means by which the Knight valve surely will get into the Garden.

It is by no means an exaggeration to state that practically every principal, every method of construction, and every device that has proven practicable in automobile construction may be found on the floor, on the elevated platform or in the basement at the Garden. There may be some improvements also that are sufficiently new to be surrounded by an interesting glamor of question or uncertainty. Two-cycle motors, for example, which by no means are prevalent in automobile construction, have been developed to a marked degree by several manufacturers. Three radically different versions of this principle will be shown. One is the Elmore, now the oldest adherent of the two-cycle idea in the industry; the Elmore motor is

equipped with a rotary distributing valve. Another is the Amplex, a newer product but one which has acquired a retinue since it has been on the market. As a new development the Amplex motor is equipped with an air starting device. The third two-cycle is the Atlas which already is well known. This year, for the first time, lubrication of the Atlas motors is effected by mixing oil with the gasoline—a system which has been found to work very well in two-cycle practice.

Another interesting feature and one which has loyal adherents, is the friction drive which will be in evidence again this year. The Lambert was one of the first to be developed and is the oldest and one of the most successful remaining in the field. Advocates of this drive also are the makers of the Carter car, which embodies in its construction a noiseless chain drive running in oil.

An idea very unique and which, until this season, has been exclusively found in the American, is the underslung suspension of the frame. The nature of this system is such that very large wheels may be used without rendering the vehicle excessively high, and the clearance is normal under these conditions. The Regal "20" is one of the cars that during the year has acquired an under hung frame.

With almost as much regularity as months come and go do air-cooled cars rise and fall. However the Franklin, a staunch and very successful adherent, revealing many ingenious details, will stand alone, at this particular show, as an exemplification of the air-cooled principle. One of the features and upon which is placed much dependence, is the auxiliary valves, located just above the top of the piston when at its lowest traveling point. The intake and exhaust valves are again placed separately, and an automatic auxiliary air intake is used.

It was at one time predicted that copper water jackets would be used eventually on a majority of the motors. This particular feature is conspicuous in the Chadwick and the Cadillac.

At the stands of two of the smaller cars, which also have features all their own, may be seen construction more or less original. The Brush has a one-cylinder balanced motor, and the wooden frame is suspended by spiral springs upon wooden axles. A three-point spring suspension is a feature of the Hupmobile.

Among the new models of the more striking class will be seen the Locomobile, a six-cylinder car of which much is expected because of the old and substantial reputation of its builders. One of the striking features of the Locomobile display this year will be jump spark ignition, this make hitherto having been equipped with another system. The production of its first six-cylinder car is an even more radical departure. Another of the old New England

concerns, which is turning to six-cylinder construction for the first time, is the Pope Manufacturing Co.

CALENDAR FOR GARDEN SHOW.

SATURDAY, JANUARY 7.

Formal Opening of Show, 8 p. m.
Meeting of New York State Automobile Association at Hotel Belmont, 10 a. m.

TUESDAY, JANUARY 10.

Meeting of Touring Information Board of American Automobile Association at 437 Fifth avenue, 10 a. m.
Meeting of Executive Committee of A. L. A. M. at 7 East 42d street, 10 a. m.

WEDNESDAY, JANUARY 11.

Annual Meeting of National Association of Automobile Manufacturers at 7 East 42d street.
Meeting of A. A. A. Legislative Board at 437 Fifth avenue, 10 a. m.
Meeting of Society of Automobile Engineers at Automobile Club of America, at 9 a. m.
Dinner of Society of Automobile Engineers at Automobile Club of America, at 9 p. m.

THURSDAY, JANUARY 12.

Annual Meeting of Society of Society of Automobile Engineers at Automobile Club of America, 2 p. m.
Annual Banquet of A. L. A. M. at Hotel Astor, 7 p. m.
Meeting of Board of Directors of Motor and Accessories Manufacturers at 17 West 42d street, 10:30 a. m.
Meeting of A. L. A. M. Board of Managers at 7 East 42d street.
Meeting of A. A. A. Good Roads Board at 437 Fifth avenue, 2 p. m.
Monthly Meeting of Executive Committee of A. A. A. at 437 Fifth avenue.

FRIDAY, JANUARY 13.

Annual Meeting and Election of Manufacturers' Contest Association at A. L. A. M. Headquarters, 10 a. m.
Meeting of General Rules Committee of Manufacturers' Contest Association at A. L. A. M. Headquarters.
Annual Meeting of the Motor and Accessory Manufacturers at Waldorf-Astoria, 6:30 p. m.
Annual Dinner of the Motor and Accessory Manufacturers at Waldorf-Astoria, 7:30 p. m.

TUESDAY, JANUARY 17.

Meeting of Electric Vehicle Association of America.

WEDNESDAY, JANUARY 18.

Annual Banquet of the Automobile Trade Credit Association.

Among the new models which constitute less distinguished exceptions to the practices of their makers, are the new Stoddard-Dayton convertible, the 38 horsepower Sim-

plex, which is the first shaft driven member of its line; the Speedwell 50 horsepower "Cruiser," and the Regal's "20" and "40" horsepower cars.

Cars of the more luxurious and powerful type include the Alco, Columbia, Premier, Palmer-Singer, Stearns, Stevens-Duryea and Garford. The great class of staunch and tried cars which range in price around the two thousand dollar mark are the Haynes, Marmon, National, Mercer, Ohio, Inter-State, White, Selden, Chalmers, Corbin, Moline and Kissel. For lighter use the bill is filled by such makes as the Marion, Regal, Reo, Cadillac, Hudson, Everitt and E-M-F. When it comes to a variety of models and a range of purpose and price such exhibitions as those of the Overland, Jackson, Maxwell, Mitchell and Pullman are distinctive.

Of course there will be a display of striking and elaborate bodies of the deluxe order, as always has been the case at Madison Square Garden shows; bodies and cars of the sort that are built, not merely for display purposes but for the convenience and comfort of those who are able to afford the best that the land can produce. Conspicuous among such exhibits will be the latest product of the Pierce-Arrow company, the George Washington coach. This new idea in body construction is a five-passenger landaulet, mounted on a 66 horsepower chassis. In color the car is green with an autumn brown stripe. As in the olden days, when the carriage owners took pride in having the ideas of famous artists appear on the body parts of their equipage, this coach has its panels painted by an artist who also assisted in the door designs. Two paintings are shown on the panels, one of a scene at Mt. Vernon, and another a vista of Washington, the city. Under these are reproductions of the coat of arms of George Washington. The interior is fitted with a folding wash basin, a luncheon locker and various toilet accessories.

As far as it is possible to classify body displays in advance, it may be said that closed front structures and likewise fully enclosed bodies, whether built for two passengers or more, will constitute the predominating elements of novelty. By the term closed front, it is intended at once to indicate and summarize that well classed but variously named style of coach work to which various makers are pleased to apply the following designations: Fore-door, four-door, front door, vestibule, side door, Dutch door and torpedo. For it is the way of manufacturers in general to seek distinctiveness in name as well as in more substantial features as applied to their products. Whatever it is called, however, the high-sided car is but a more highly developed and sometimes more highly refined outgrowth of the torpedo movement of one year ago. The spirit of the thing is to secure added comfort and cleanliness for the occupants of the front seat, comfort, gen-

erally speaking, meaning warmth. As the comfort part of it has been, perhaps, too thoroughly done in some cases, it will be found that some of the new closed front models are provided with little ventilators to counteract the discomforting influence of warm weather. Detachable doors, of course, are intended to serve the same purpose.

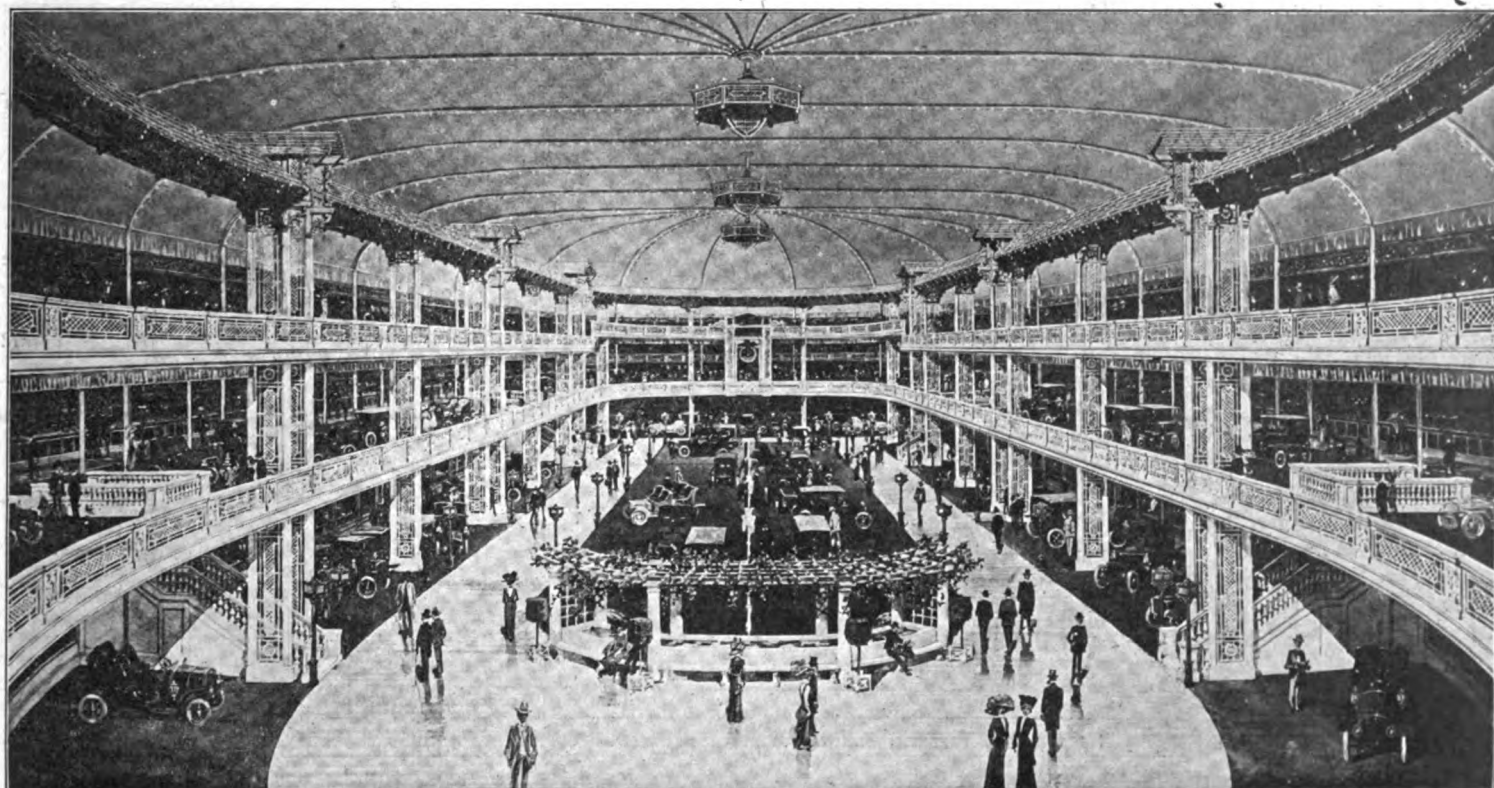
When it comes to fully enclosed bodies, it is possible to find even a greater number of distinguishing terms than are applied to the closed-front type. The general purpose intended, again, is the same,

being the style which affords ample accommodation for not only two but three, or even four passengers.

A foreign development, which it would not be surprising to see reproduced in this country is the five or even seven-passenger limousine with but two doors, one on either side, which thus permit free communication between all the occupants. Another style of closed body, which has already found favor in this country, is the two compartment, or "first" and "second" class carriage. By way of adding a novel and right-up-to-the-minute touch, the fore

abouts and Heaven-knows-whatabouts, there will be doubtless a plentiful, prodigious and pleasing variety. Big cars and little cars, convertible cars and non-convertible cars, cars with chauffeur's seats in the rear that fold up and stow beneath a flat deck, cars with chauffeur's seats on the running board, and cars with no chauffeur's seat at all, will be bewilderingly distributed about the Garden.

Polished chassis and painted chassis, chassis with "works" that go, being driven by electric motors, and chassis with "works" that do not go, since no gasoline



HOW MADISON SQUARE GARDEN WILL BE TRANSFORMED INTO A LATTICED GARDEN FOR THE A. L. A. M. SHOW

however. Enclosed bodies belong to the luxurious class and are designed for the use of people who desire to motor all the year round, and are able to do so. The production of inside driven coupes is increasing; a new development at this time

compartments of some of these models will be found equipped with half-doors, the vehicles thus partaking of both the limousine and closed front touring types.

Of roadsters, runabouts, tourabouts, speedabouts, gadabouts, flyabouts, race-

is allowed in the building; crankshafts, cam shafts, cylinders and clutches—parts enough to confuse even the most experienced technician—will serve to complete the displays and leave nothing to be desired by the thinking show-goer.

The 67 Pleasure Cars that will be Exhibited in Madison Square Garden

American Locomotive Co., Providence, R. I. (119)—Alco.
 American Motor Car Co., Indianapolis, Ind. (102)—American.
 Atlas Motor Car Co., Springfield, Mass. (219)—Atlas.
 Auto-Car Co., Ardmore, Pa. (117)—Autocar.
 Brush Runabout Co., Detroit, Mich. (112)—Brush.
 Buckeye Mfg. Co., Anderson, Ind. (106)—Lambert.
 Buick Motor Co., Flint, Mich. (15)—Buick.
 Cadillac Motor Car Co., Detroit, Mich. (16)—Cadillac.

Cartercar Co., Pontiac, Mich. (221)—Cartercar.
 Chadwick Engineering Works, Pottstown, Pa. (206)—Chadwick.
 Chalmers Motor Co., Detroit, Mich. (21)—Chalmers-Detroit.
 Columbia Motor Car Co., Hartford, Conn. (118)—Columbia.
 Corbin Motor Vehicle Corporation, New Britain, Conn. (54)—Corbin.
 Courier Car Co., Dayton, Ohio (217)—Courier car.
 Daimler Import Co., New York City (50)—Mercedes.

Dayton Motor Car Co., Dayton, Ohio (5)—Stoddard-Dayton.
 E-M-F Co., Detroit, Mich. (23)—E-M-F and Flanders.
 Elmore Mfg. Co., Clyde, Ohio (8)—Elmore.
 Flandrau Motor Co., New York City (213)—Brazier.
 Franklin Mfg. Co., H. H., Syracuse, N. Y. (4)—Franklin.
 Garford Co., Elyria, Ohio (120)—Garford.
 Haynes Automobile Co., Kokomo, Ind. (114)—Haynes.
 Hotchkiss Import Co., New York City (113)—Hotchkiss.

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- Hupp Motor Car Co., Detroit, Mich. (205)—Hupmobile.
 Inter-State Automobile Co., Muncie, Ind. (201)—Inter-State.
 Jackson Automobile Co., Jackson, Mich. (111)—Jackson.
 Kissell Motor Car Co., Hartford, Wis. (204)—Kissell.
 Knox Automobile Co., Springfield, Mass. (101)—Knox.
 Locomobile Co. of America, Bridgeport, Conn. (10)—Locomobile.
 Lozier Motor Co., Plattsburg, N. Y. (7)—Lozier.
 McIntyre Co., Auburn, Ind. (209)—McIntyre.
 Marquette Motor Co., Marquette, Mich. (210)—Marquette-Buick.
 Matheson Motor Car Co., Wilkes-Barre, Pa. (103)—Matheson.
 Mercer Auto Co., Trenton, N. J. (51)—Mercer.
 Metzger Motor Car Co., Detroit, Mich. (116)—Everitt.
 Midland Motor Co., Moline, Ill. (215)—Midland.
 Mitchell-Lewis Motor Co., Racine, Wis. (12)—Mitchell.
 Moline Automobile Co., East Moline, Ill. (107)—Moline.
 Moon Motor Car Co., St. Louis, Mo. (52)—Moon.
 National Motor Vehicle Co., Indianapolis, Ind. (104)—National.
 Nordyke & Marmon Co., Indianapolis, Ind. (55)—Marmon.
 Oakland Motor Car Co., Pontiac, Mich. (6)—Oakland.
 Ohio Motor Car Co., Cincinnati, Ohio (202)—Ohio.
 Olds Motor Works, Lansing Mich. (3)—Oldsmobile.
 Packard Motor Car Co., Detroit, Mich. (14)—Packard.
 Palmer & Singer Mfg. Co., New York City (203)—P & S.
 Pierce Motor Co., Racine, Wis. (212)—Case.
 Pierce-Arrow Motor Car Co., Buffalo, N. Y. (20)—Pierce-Arrow.
 Pope Mfg. Co., Hartford, Conn. (110)—Pope-Hartford.
 Premier Motor Mfg. Co., Indianapolis, Ind. (108)—Premier.
 Pullman Motor Car Co., York, Pa. (109)—Pullman.
 Regal Motor Car Co., Detroit, Mich. (208)—Regal.
 Reo Motor Car Co., Lansing, Mich. (18)—Reo.
 Royal Tourist Car Co., Cleveland, Ohio (115)—Royal Tourist.
 Selden Motor Vehicle Co., Rochester, N. Y. (105)—Selden.
 Simplex Automobile Co., New York City (218)—Simplex.
 Simplex Motor Car Co., Mishawaka, Ind. (53)—Amplex.
 Speedwell Motor Car Co., Dayton, Ohio (207)—Speedwell.
 Stearns Co., F. B., Cleveland, Ohio (1)—Stearns.
 Stevens-Duryea Co., Chicopee Falls, Mass. (13)—Stevens-Duryea.
 Thomas Motor Co., E. R., Buffalo, N. Y. (2)—Thomas.
 White Co., Cleveland, Ohio (121)—White.
 Willys-Overland Co., Toledo, Ohio (17)—Overland.
 Winton Motor Carriage Co., Cleveland, Ohio (9)—Winton.

The 326 Exhibits of Accessories that will be Displayed in Madison Square Garden

- Ajax-Grieb Rubber Co., New York City (222)—Ajax tires.
 Ajax Trunk & Sample Case Co., New York City (549)—Tire trunks.
 Allen Auto Specialty Co., New York City (623)—Tire covers, lock and holders.
 Allers, Harry A., New York City (595)—Solderine.
 Alexander Mfg. Co., J. (415)—Specialties.
 American Ball Bearing Co., Cleveland, Ohio (177)—Ball bearings and axle equipments.
 American Ever Ready Co., New York City (242)—Ever ready batteries, lamps, etc.
 Apple Electric Co., Dayton, Ohio (238)—Dynamos, storage batteries and lighting accessories.
 Arnold, N. B., Brooklyn, N. Y. (547)—Slik-up tire preparation.
 Asch, B. M., New York City (616)—Motor-rope.
 Ashland Mfg. Co., Ashland, Ohio (406)—Crown auto jack.
 Atlantic Refining Co., Cleveland, Ohio (318)—Arco Spotzoff metal polish.
 Atlas Chain Co., Brooklyn, N. Y. (567)—Atlas tire chains.
 Auburn Auto Pump Co., Auburn, N. Y. (268)—Tire pumps.
 Auto Supply Mfg. Co., Brooklyn, N. Y. (618)—Steel lined tubing.
 Automobile Topics, New York City (596)—Publications.
 Automobile Tire Co., New York City (423)—Tires.
 Auto Wind Shield Co., Cambridge, Mass. (538)—Windshields.
 Auto Improvement Co., New York City (241)—Self-starting devices and accessories.
 A-Z Co., New York City (597)—Radiators, hoods, mud guards, metal hampers.
 B & L Auto Lamp Co., New York City (575)—Lamps.
 Badger Brass Mfg. Co., Kenosha, Wis. (126)—Solar lamps and generators.
 Baker Sales Co., New York City (422)—Specialties.
 Balzer, Gus, New York City (592)—License plates, monograms and sundries.
 Baldwin Chain & Mfg. Co., Worcester, Mass. (135)—Baldwin chains and recoil checks and Brown steering gears.
 Barthel, Daly & Miller, New York City (584)—Schafer ball bearings.
 Batavia Rubber Co., Batavia, N. Y. (278)—Batavia tires.
 Benford, E. M., Mount Vernon, N. Y. (419)—Spark plugs and timers.
 Best Ignition Equipment Co., New York City (405)—Best spark plugs.
 Bliven & Carrington, Inc., New York City (534)—Oils.
 Bosch Magneto Co., New York City (224)—Ignition systems.
 Bowser & Co., S. F., Fort Wayne, Ind. (191)—Bowser gasoline and oil storage apparatus.
 Bretz Co., J. S., New York City (586)—U. & H. magnetos, F. & S. annular ball bearings and Bowden wire fittings.
 Briggs Mfg. Co., Elkhart, Ind. (291)—Briggs magneto.
 Briggs & Stratton Co., Milwaukee, Wis. (269)—B & S igniter.
 Briscoe Mfg. Co., Detroit, Mich. (186)—Radiators and fittings.
 Broga Automatic Fastener Co., Syracuse, N. Y. (416)—Broga automatic fasteners.
 Brown Co., Syracuse, N. Y. (572)—Brown tire pressure tester.
 Brown-Lipe Gear Co., Syracuse, N. Y. (170)—Transmissions, differentials and steering gears.
 C-M-B Wrench Co., Syracuse, N. Y. (582)—Silver King socket wrench.
 Calmon Asbestos & Rubber Works of America, New York City (415B)—Packing.
 Campbell, A. U., Toledo, Ohio (409)—Specialties.
 Carpenter Steel Co., Reading, Pa. (216)—Frames, axles, etc.
 Castle Lamp Co., Toledo, Ohio (181)—Lamps.
 Century Rubber Trading Co., New York City (322)—Tires.
 Champion Ignition Co., Detroit, Mich. (627)—Coils, timers, etc.
 Chandler Co., Springfield, Mass. (153)—Nameplates and monograms.
 Chase & Co., L. C., Boston, Mass. (265)—Tops and top leathers.
 Chilton Co., Philadelphia, Pa. (600)—Publications.
 Class Journal Co., New York City (505)—Publications.
 Clayton Air Compressor Co., New York City (610)—Garage and tire pumps.
 Cleveland Speed Indicator Co., Cleveland, Ohio (254)—Cleveland speed and time indicators.
 Coes Wrench Co., Worcester, Mass. (155)—Wrenches.
 Columbia Lubricants Co., New York City (223)—Lubricants.
 Columbia Nut & Bolt Co., Bridgeport, Conn. (154)—Lock nuts.

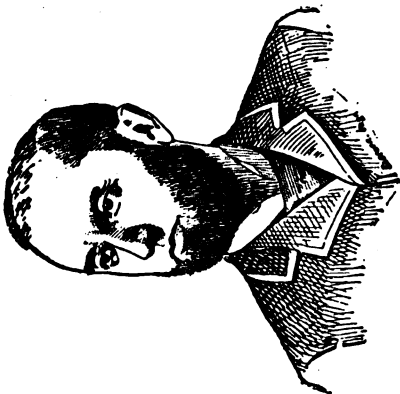
- Connecticut Telephone and Electric Co., Meridian, Conn. (152)—Shock absorbers, spark coils, switches and ignition specialties.
- Consolidated Rubber Tire Co., New York City (148)—Tires.
- Continental Caoutchouc Co., New York City (228)—Continental tires and rims.
- Continental Rubber Works, New York City (144)—Tires.
- Cook's Sons, Adam, New York City (157A)—Lubricants.
- Cook's Standard Tool Co., Kalamazoo, Mich. (259)—Tools.
- Couch & Seeley Co., Boston, Mass. (588)—Casgrain speedometer.
- Cowles & Co., C., New Haven, Conn. (271)—Forgings, mountings and trimmings.
- Cox Brass Mfg. Co., Albany, N. Y. (625)—Brass automobile accessories.
- Cramp & Sons Ship and E. B. Co., Wm., Philadelphia, Pa. (187)—Bronze and bearing metals.
- Crucible Steel Co., Lansdowne, Pa. (285)—Crucible steel castings.
- Cross Distributing Co., Frank H., New York City (603)—Supplies.
- Culver Stearns Mfg. Co., Worcester, Mass. (404)—Electric lighting specialties.
- Deitz, Co., New York City (189)—Lamps.
- Delcampe Welding Co., Bridgeport, Conn. (535)—Autogenous welding apparatus.
- Detroit Motor Car Supply Co., Detroit, Mich. (542)—Automobile tops.
- Diamond Chain & Mfg. Co., Indianapolis, Ind. (139)—Chains and sprockets.
- Diamond Rubber Co., Akron, Ohio (128)—Diamond tires.
- Dixon Crucible Co., Jos., Jersey City, N. J. (182)—Graphite and lubricants.
- Doehler Die Casting Co., Brooklyn, N. Y. (400)—Die cast parts.
- Dorian Remountable Rim Co., New York City (511)—Dorian remountable rims.
- Downing, Chas. J., New York City (604)—Supplies.
- Dover Stamping and Mfg. Co., Cambridge, Mass. (313)—Drip pans and funnels.
- Driggs-Seabury Ordnance Corp., Sharon, Pa. (253)—Crank shafts and frames.
- Eagle Co., Newark, N. J. (605)—Windshields and spark plugs.
- Edmunds & Jones Mfg. Co., Detroit, Mich. (157)—Lamps.
- Edison Storage Battery Co., Orange, N. J. (257)—Storage batteries.
- Eiseman Magneto Co., New York City (229)—Magnetos.
- El Arco Radiator Co., New York City (577)—Radiators.
- Electric Speedometer & Dynamometer Mfg. Co., Washington, D. C. (506)—Hopkins "Dynatak."
- Electric Storage Battery Co., Philadelphia, Pa.—Accumulators.
- Elliott, H. A., Cleveland, Ohio (410)—Drop forged axles and crankshafts.
- Elliott Auto-Lighter Co., Baltimore, Md. (549)—Automatic lamp lighter.
- Elite Mfg. Co., Ashland, Ohio (580)—Jacks.
- Empire Tire Co., Trenton, N. J. (231)—Empire tires.
- Ernst's Sons, C. F., Buffalo, N. Y. (514)—Turntables.
- Excelsior Motor & Mfg. Co., Chicago, Ill. (246)—Motors.
- Fedders Mfg. Co., Buffalo, N. Y. (539)—Radiators.
- Fegley Tire Chain Co., Philadelphia, Pa. (526)—Anti-skid chains.
- Findeisen & Kropt Mfg. Co., Chicago, Ill. (571)—Carburetters and specialties.
- Firestone Tire & Rubber Co., Akron, Ohio (164)—Firestone pneumatic and solid tires.
- Fisk Rubber Co., Chicopee Falls, Mass. (178)—Fisk tires.
- Flentje, Ernst, Cambridge, Mass. (546)—Hydraulic recoil preventer.
- Fletcher & Co., L. V., New York City (407)—Specialties.
- Foster Co., Walter H., New York City (570)—Specialties.
- Franklin Mfg. Co., H. H., Syracuse, N. Y. (die casting dept.) (569)—Dies.
- Frost Gear & Tool Co. (309)—Gears.
- Frasse Co., Peter A., New York City (564)—Tubing and tools.
- G & J Tire Co., Indianapolis, Ind. (131)—G & J tires.
- Gabriel Horn Mfg. Co., Cleveland, Ohio (180)—Gabriel exhaust horns and Foster shock absorbers.
- Garage Equipment Mfg. Co., Milwaukee, Wis. (510)—Gem spark plug wrench.
- Geiszler Bros. Storage Battery Co., New York City (513)—Storage batteries.
- Gemmer Mfg. Co., Detroit, Mich. (245)—Steering gears and parts.
- Gilbert Mfg. Co., New Haven, Conn. (272)—Bowers carburetter, tire jackets, lamp covers, etc.
- Gibney & Bro., Jas. L., Philadelphia, Pa. (557)—Gibney tires.
- Globe Machine & Stamping Co., Cleveland, Ohio (274)—Steel boxes for tools.
- Goodrich Co., B. F., Akron, Ohio (127)—Goodrich tires.
- Goodyear Tire and Rubber Co., Akron, Ohio (122)—Goodyear tires and air bottles.
- Gray & Davis, Amesbury, Mass. (130)—Lamps.
- Gotham Aluminum Solder Co., New York City (553)—Solder.
- Gyrex Mfg. Co., New York City (516)—Gyrex mixer.
- H. S. M. Auto Switch Co., Philadelphia, Pa. (560)—Cylinder cut-out switch.
- Hardy Co., R. E., Chicago, Ill. (264)—Starite spark plugs.
- Harris Oil Co., R. A., Providence, R. I. (162)—Lubricants.
- Harrison Radiator Co., Lockport, N. Y. (607)—Radiators.
- Hartford Rubber Works Co., Hartford, Conn. (125)—Hartford tires.
- Hartford Suspension Co., Jersey City, N. J. (156)—Truffault-Hartford shock absorbers.
- Havoline Oil Co., New York City (303)—Lubricants.
- Haws, Geo. A., New York City (260)—Lubricants.
- Hayes Mfg. Co., Detroit, Mich. (302)—Radiators, hoods and fenders.
- Hazen-Brown Co., Boston, Mass. (411)—Vulcanizing materials.
- Heinze Electric Co., Lowell, Mass. (184)—Magnetos, coils and ignition devices.
- Herz & Co., New York City (190)—Magnetos and ignition devices.
- Hess-Bright Mfg. Co., Philadelphia, Pa. (304)—Ball bearings.
- Hoffecker Co., Boston, Mass. (236)—Speedometers.
- Hofacker Mfg. & Supply Co., New York City (532)—Sheet metal supplies.
- Hoffnung & Co., Ltd., S., New York City (585)—Coventry chains and "Fastnut" lock washers.
- Hollingshead Co., R. M., Camden, N. J. (512)—Whiz automobile specialties.
- Homo Co. of America, Jersey City, N. J. (261)—Homo mixer.
- Hopewell Bros., Newton, Mass. (517)—Tire cases.
- Horseless Age, New York City (558)—Publications.
- Howard Demountable Rim Co., Trenton, N. J. (323)—Howard demountable rim.
- Hydraulic Oil Storage Co., Detroit, Mich. (507)—Oil tanks and storage systems.
- Ideal Wind Shield Co., New York City (522)—Windshields and tops.
- International Engineering Co., New York City (601)—R B F ball bearings.
- International Metal Polish Co., Indianapolis, Ind. (415)—Blue Ribbon polish.
- Jeffery-Dewitt Co., Newark, N. J. (576)—Reliance spark plugs.
- Johns-Manville Co., H. W., New York City (255)—J M non-burn brake lining.
- Johnson & Co., Isaac G., Spuyten Duyvil, N. Y. (287)—Forgings and castings.
- Jones Speedometer Co., New York City (141)—Speedometers, odometers, annunciators and specialties.
- Jones & Co., Phineas, Newark, N. J. (136)—Wood wheels and rims.
- K-W Ignition Co., Cleveland, Ohio (624)—Ignition devices.
- K & W Mfg. Co., Ashland, Ohio (581)—K & W reliners for tires.
- Keen Starter Co., New York City (529)—Starters.
- Kent Mfg. Works, Atwater, Philadelphia, Pa. (281)—Igniters and timers.
- Keystone Lubricating Co., Philadelphia, Pa. (612)—Keystone oils and grease.
- Kelsey Co., F. H., Cleveland, Ohio (409A)—Saunders lever lock.
- Kellogg Mfg. Co., Rochester, N. Y. (294)—Kellogg hand and power air pumps.
- Keystone Steel Casting Co., Chester, Pa. (503)—Crucible steel castings.

The Motor That Was Worth a \$100,000,000; also the Promoter

(Reprint of an amusing and suggestive automobile "prospectus" issued in 1892)

THE GREATEST THING IN THE WORLD!

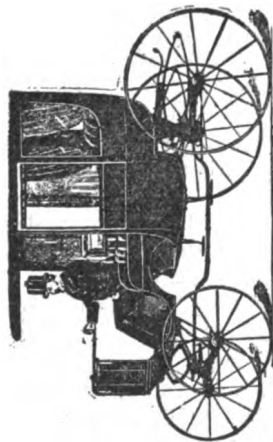
The most Wonderful Invention the World has ever known
is Invented by a Minneapolis Man.



S. H. WOOD, the Inventor.

FEW SUSPECTED THAT HE WOULD BE THE GREATEST INVENTOR of the AGE.

Yet such is the fact, for within the next sixty days he will introduce upon the streets of Minneapolis the most wonderful invention the world has ever seen! Simple as it is, it will revolutionize the work of the Cut of Revolution Motor Carriage on the Streets of Minneapolis in 1892.



BRIEF HISTORY OF THE INVENTION.

Just before the great Chicago fire in 1871, Mr. Wood, then a boy of fifteen, worked in a cabinet shop in an Iowa town. One of the greatest troubles that he saw around him at that time was the constant breaking down of the dykes or levees that were built around the Cedar River, to control the water necessary for the running of the mills at that place. The mill dam was always a source of trouble, throwing the water back too much during the rainy season. As Mr. Wood was fond of sport in those days, he found the dam an undesirable obstruction in the river, as it not only prevented free boating on the river, but it prevented the fish from getting up the river in the spring.

As Mr. Wood had always been of an inventive mind these things caused him to give considerable thought to the matter, with the purpose to find some kind of a water wheel which would do away with the present system of river dams, but owing to press of circumstances he did not reach a decision until a few years ago, when seemingly unfortunate circumstances gave him more time for study, and he finally succeeded in drawing plans for a **Water Wheel** which can be used in any river without any material obstruction; but, when he had done this, his mind turned to some power for mills where there is no water, and in this he has

REACHED SUCCESS FAR BEYOND HIS EXPECTATION, FOR HE HAS INVENTED A MOTIVE POWER THAT REVOLUTIONIZES THE WORK OF THE WORLD.

BECAUSE: It is the simplest thing in the world; it is cheaper than steam, electricity, or any other kind of power in use at the present time. It is intended for running mills, elevators, cars, street cars, ships, buggies, wagons, and in fact every kind of machinery or vehicle that is known.

SOME IDEA OF ITS USEFULNESS AND VALUE CAN BE OBTAINED FROM THE FOLLOWING FIGURES:

A single motor of fifty horse power can be put in one of Mr. Lowry's street cars at a cost not exceeding \$200, which will run the car at any rate of speed from two to thirty miles an hour, and at a cost not exceeding \$50 per year. A single motor with balasted car combined, capable of drawing the heaviest train of cars ever taken out of Minneapolis, can be built for \$3000, and run at an expense not exceeding \$5.00 per day; and a single motor can be put in a family carriage at a cost of \$100, and run the carriage every day for a year at a cost not exceeding \$25.00 a year.

**READER! CAN YOU ESTIMATE THE VALUE OF SUCH AN INVENTION?
IT IS WORTH MORE THAN THE BELL TELEPHONE PATENT.**

IT IS WORTH OVER ONE HUNDRED MILLION DOLLARS.

NOW: Mr. Wood does not want all this. He is willing to divide with the rest of the world, keeping only a fair amount as his just right;

THEREFORE, instead of offering to sell his invention for \$100,000,000.00 or even for \$10,000,000.00, which is one-tenth of what it is actually worth, he has placed upon it a value of only \$1,000,000, and this he has divided into 500,000 shares of two dollars each. One-fifth of these have already been taken by a prominent wholesale merchant of Minneapolis, and now a limited amount of the remaining shares are offered to the public for the next sixty days, pending the completion of the first motor, now under process of construction.

The price fixed on these shares will be as follows: Shares subscribed and paid for before June 25th, the price will be \$2.00 per share. Shares subscribed for after June 25th, and before July 10th, will be \$4.00 per share; and shares subscribed and paid for after July 10th, and before August 1st, will be \$10.00 per share. One-half of this money will go to Mr. Wood as payment of the invention, and the other half will be used in manufacturing motors, and in which every share-holder will have an equal interest.

Until the patents are issued it will be best for all concerned that the invention itself be kept under lock and key. But Mr. Wood promises to make a public exhibition of the motor on the streets of Minneapolis on August 1st, 1892, and every share-holder will then be given every opportunity to examine the invention in all its details, and on September 1st any and every share-holder who is in any way dissatisfied can have his or her money back again.

Remember that from now until June 25th the shares are only \$2.00 each, and every share is worth not less than \$100; if it does not prove so you can get your money back Sept. 1st. This is the chance of a lifetime. The world has never seen so useful and valuable an invention.

For further information and shares, call on or address,

**S. H. WOOD & CO., Investment Brokers,
913 Guaranty Loan Building,
MINNEAPOLIS, MINN.**

CUT THIS OUT AND SEND IT WITH DRAFT:

To S. H. WOOD & CO.,
913 Guaranty Loan Building,
MINNEAPOLIS, MINN.
1892.

Enclosed please find \$_____ for which please send me
Shares in the Revolution Motor invented by Mr. S. H. Wood.
This subscription to be according to the terms of your circular issued May 27, 1892.

WANTED, Gentlemen and Lady Agents,
Boys and Girls to take orders for
shares in every City in the United
States. Send for Circulars and go to
work at once.

Name _____

Address _____

An elegant buggy will be given as a premium to the agent, boy or girl, who sells
the largest number of shares between now and August 1.

- Kilgore Mfg. Co., Boston, Mass. (509)—
Kilgore air shock absorber.
- King Optical Co., Julius, New York City (556)—Goggles.
- Kokomo Electric Co., Kokomo, Ind. (174)
—Kingston spark plugs, coils and timers.
- Lambert, G. B. (531)—Specialties.
- Leather Tire Goods Co., Niagara Falls, N. Y. (275)—Adjustable tire treads and non-skid bands.
- Lebanon Steel Castings Co., Lebanon, Pa. (237)—Steel castings.
- Lee Co., J. Elwood, Conshohocken, Pa. (258)—Jelco-Atlas puncture proof inner case.
- Lefevre Arms Co., Syracuse, N. Y. (543A).
—Specialties.
- Light Mfg. & Foundry Co., Pottstown, Pa. (134)—Aluminum parts and castings.
- Lehman Mfg. Co., New York City (159)—
L-H-L ignition system.
- Link-Belt Co., Philadelphia, Pa. (235)—
Chains.
- Livingston Radiator & Mfg. Co., New York City (250)—Radiators.
- Lovell-McConnell Mfg. Co., Newark, N. J. (226)—Klaxon horns.
- Luce Mfg. Co., Dalton, Mass. (553A)—Lamp brackets.
- Lutz-Lockwood Mfg. Co., Aldene, N. J. (590)—S-X ignition devices.
- McCord Mfg. Co., Detroit, Mich. (325)—
Radiators, lubricators, fans and gaskets.
- McCue Co., Hartford, Conn. (282)—Axles.
- Manufacturers Foundry Co., Waterbury, Conn. (279)—Castings.
- Marburg Bros., New York City (307)—Mea magnetos.
- Merchant & Evans Co., Philadelphia, Pa. (501)—Hele-Shaw universal clutch and Star tire jackets, etc.
- Metal Stamping Co., Long Island City, N. Y. (417)—Stampings.
- Meteor Gas Co. of New York, New York City (578)—Rubber tires.
- Mezger, C. A., Inc., New York City (142)
—Windshields, "Soot-proof" spark plugs.
- Michelin Tire Co., Milltown, N. J., (225)—
Michelin tires.
- Miller, Chas. E., New York City (161)—
Supplies.
- Miller Rubber Co., Akron, Ohio (249)—
Tires.
- Miller's Sons, Wm. P., Long Island City, N. Y. (565)—Excelsior fibrous oils.
- Morgan & Wright, Detroit, Mich. (132)—
Morgan & Wright tires.
- Morrison-Ricker Mfg. Co., Grinnell, Ia. (158)—Grinnell gloves.
- Mosler & Co., A. R., New York City (179)
—Spark plugs.
- Motor Specialties Co., Boston, Mass. (402)
—"Flash" auto lighter.
- Motor Parts Co., Plainfield, N. J. (402)—
Stanwood steps.
- Motor Vehicle Publishing Co., New York City (552)—Publications.
- Motor World, New York City (561)—The Motor World.
- Motor, New York City (555)—Publications.
- Motor Print Co., New York City (551)—
Publications.
- Motor Car Equipment Co., New York City (562)—Accessories.
- Motz Clincher Tire & Rubber Co., Akron, Ohio (248)—Tires.
- Muncie Gear Works, Muncie, Ind. (244)—
Motor buggy parts.
- Muncie Wheel Co., Muncie, Ind. (284)—
Wheels.
- Mutty Co., L. J., Boston, Mass. (613)—Auto-
mobile top fabrics.
- Myers, Inc., A. J., New York City (606)—
G & A carburetter.
- National Carbon Co., Cleveland, Ohio (133)
—Dry cells.
- National Coil Co., Lansing, Mich. (266)—
Spark coils.
- National Tube Co., Pittsburg, Pa. (138)—
Shelby seamless steel tubing.
- New Departure Mfg. Co., Bristol, Conn. (234)—Ball bearings.
- Newark Rivet Works, Newark, N. J. (295)
—Windshields.
- New England Automobile Journal, Providence, R. I. (593)—Publications.
- Newmastic Tire Co., New York City (502)
—Tire filling compound.
- New York Sporting Goods Co., New York City (500)—Accessories.
- New York Coil Co., New York City (574)—
Ignition systems.
- New York & New Jersey Lub. Co., New York City (141)—Lubricants.
- Nightingale Whistle Co., New York City (568)—Exhaust whistles.
- Nonpareil Horn Mfg. Co., New York City (589)—Automobile horns.
- Noera Mfg. Co., Waterbury, Conn. (273)—
Pumps and oil cans.
- North East Electric Co. (518)—Specialties.
- North & Judd Mfg. Co., New Britain, Conn. (324)—Brass and bronze automobile trimmings.
- Novelty Mfg. Co., Jackson, Mich. (533)—
Hoods, mud guards and tanks.
- Oliver Mfg. Co., Chicago, Ill. (165)—Peer-
less jacks.
- Pantasote Co., New York City (192)—
Tops and upholstering materials.
- Parker Motor Co., Hartford, Conn. (283)—
Parker motors.
- Pennsylvania Rubber Co., Jeannette, Pa. (146)—Pennsylvania tires.
- Perfection Spring Co., Racine, Wis. (541)—
Automobile springs.
- Philadelphia Grease Mfg. Co., Philadelphia, Pa. (521)—Lubricants.
- Philadelphia Steel & Forge Co., Philadelphia, Pa. (412)—"P F Standard" metal alloys.
- Pittsfield Spark Coil Co., Dalton, Mass. (168)—Magnetos, coils, plugs and ignition devices.
- Polson Mfg. Co., Buffalo, N. Y. (621)—
Steel.
- Post & Lester Co., Hartford, Conn. (550)—
Accessories.
- Pratt Mfg. Co., Wm. E., Chicago, Ill. (537)
—Specialties.
- Prosser & Son, Thos., New York City (599)
—Automobile steels.
- Pruden Hardware Co., New York City (519)
—Accessories.
- R. I. V. Co., New York City (615)—R. I.
V. ball bearings.
- Randall-Faichney Co., Boston, Mass. (149)
—Jericho exhaust horns, B-line grease guns and Bing spark plugs.
- Randerson Auto Parts Co., New York City (540)—Parts.
- Randolph & Co., New York City (424)—
Wholesale haberdashers.
- Rands Mfg. Co., Detroit, Mich. (305)—Tops
and accessories.
- Reinhold Noflux Aluminum Solder Co., Newark, N. J. (426)—Solders.
- Reilly & Son, P., Philadelphia, Pa. (566)—
Lapropes.
- Remy Electric Co., Anderson, Ind. (147)—
Magnetos.
- Republic Rubber Co., Youngstown, Ohio (151)—Republic tires.
- R. chenbach Laboratories Co., Chicago, Ill. (311)—Vortex vaporizer.
- Robinson, Fred, New York City (539)—
Tail lamps.
- Royal Equipment Co., Bridgeport, Conn. (252)—Band brakes and brake lining material.
- Rushmore Dynamo Works, Plainfield, N. J. (418)—Lamps.
- Rutherford Rubber Co., Rutherford, N. J. (408)—Sterling tires.
- S. B. R. Specialty Co., East Orange, N. J. (614)—S. B. R. muffler cut-out.
- Sager Co., J. H., Rochester, N. Y. (267)—
Supplementary springs.
- Seamless Rubber Co., New Haven, Conn. (263)—Bragg stitched tires.
- Shaler Co., C. A., Waupun, Wis. (270)—
Electric vulcanizers.
- Shawmut Tire Co., Boston, Mass. (611)—
Shawmut tires.
- Sheldon Axle Co., Wilkes-Barre, Pa., (617)
—Axles and springs.
- Sherwin-Williams Co., New York City—
Paints and varnishes.
- Simms Magneto Co., New York City (587)
—Simms magneto.
- Simonds Mfg. Co., Fitchburg, Mass. (598)—
Tools.
- Smith Co., H. D., Plantsville, Conn. (528)—
Forgings and tools.
- Sireno Co., New York City (317)—Electric
horns.
- Smith Co., A. O., Milwaukee, Wis. (137)—
Gears and parts.
- Sparks-Withington Co., Jackson, Mich. (308)—Fans, stampings and screw machine products.
- Spicer Mfg. Co., Plainfield, N. J. (169)—
Spicer universal joints.
- Splitdorf, Inc., C. F., New York City (129)
—Splitdorf magnetos, plugs and ignition devices.

- Sprague Umbrella Co., Norwalk, Ohio (301)—Tops and windshields.
- Springfield Metal Body Co., Springfield, Mass. (193)—Metal bodies.
- Standard Roller Bearing Co., Philadelphia, Pa. (163)—Roller bearings.
- Standard Welding Co., Cleveland, Ohio (176)—Electrically welded tubing and parts.
- Standard Thermometer Co., Boston, Mass. (286)—Standard speedometer.
- Standard Metal Work Co., Thompsonville, Conn. (563)—Manifolds.
- Stanley, John T., New York City (554)—Oils and greases.
- Star Rubber Co., Akron, Ohio (251)—Star tires.
- Star Speedometer Co., Danville, Pa. (619)—Star speedometer.
- Star Starter Co., New York City (543)—Starting appliances.
- Stein Double Cushion Tire Co., Akron, Ohio (256)—Tires.
- Stevens Mfg. Co., New York City (292)—Keno tire pump connection.
- Stevens & Co., New York City (520)—Acorn pump nipple.
- Stewart Machine Works, Alfred C., Los Angeles, Cal. (622)—Stewart carburetter.
- Stewart & Clark Mfg. Co., Chicago, Ill. (230)—Speedometers.
- Stromberg Motor Devices Co., Chicago, Ill. (243)—Carburetters.
- Swinehart Tire & Rubber Co., Akron, Ohio (171)—Swinehart tires.
- Thermoid Rubber Co., Trenton, N. J. (232)—Tires, tubes and brake linings.
- Timken Roller Bearing Co., Canton, Ohio (166)—Roller bearings.
- Timken-Detroit Axle Co., Detroit, Mich. (167)—Axles.
- Tingley & Co., Chas. O., Rahway, N. J. (602)—C. O. T. electrical horn.
- Tracy, Joseph, New York City (545)—Dynamometer and testing apparatus.
- Troy Auto Specialties Co., Troy, N. Y. (315)—Windshields.
- Turner Brass Works, Syracuse, Ill. (240)—Brass parts and fittings.
- Tuttle Motor Co., Canistota, N. Y. (608)—Motors.
- U. S. Light & Heating Co., New York City (150)—Storage batteries.
- U. S. McAdamite Metal Co., Brooklyn, N. Y. (591)—McAdamite metal.
- United Steel Co., Canton, Ohio (320)—Vanadium steel.
- Universal Rim Co., Chicago, Ill. (579)—Universal demountable rims.
- Union Auto Specialties Co. (530)—Supplies.
- Universal Tire Protector Co., Angola, Ind. (414)—Universal tire protector.
- Vacuum Oil Co., Rochester, N. Y. (185)—Lubricants.
- Valentine & Co., New York City (183)—Varnishes.
- Valve Seating Tool Co. (620)—Valve grinding tools.
- Vanadium Sales Co., Pittsburg, Pa. (321)—Steels and alloys.
- Vanadium Metals Co., Pittsburg, Pa. (312)—Victor vanadium bronze.
- Van Wagner Co., E. B., Syracuse, N. Y. (262)—Dies and finished metal castings.
- Veeder Mfg. Co., Hartford, Conn. (124)—Tachometers and odometers.
- Vesta Accumulator Co., Chicago, Ill. (233)—Accumulators.
- Vehicle Hood & Apron Co., Columbus, Ohio (523)—Gordon tire covers.
- Voorhees Rubber Mfg. Co., Jersey City, N. J. (421)—Rubber hose and packing.
- Ward Leonard Electric Co., Bronxville, N. Y. (573)—Car lighting dynamo.
- Warner Gear Co., Muncie, Ind. (175)—Gears and parts.
- Warner Instrument Co., Beloit, Wis. (172)—Warner auto-meters and clocks.
- Warner Mfg. Co., Toledo, Ohio (247)—Transmissions and steering gears.
- Wayne Oil Tank and Pump Co., Fort Wayne, Ind. (544)—Wayne oil tanks.
- Weed Chain Tire Grip Co., New York City (143)—Weed tire chains.
- Western Tool & Forge Co., Brackenridge, Pa. (314)—
- Westen Mfg. Co., Newark, N. J. (609)—Westen shock absorbers.
- Wheeler & Shebler, Indianapolis, Ind. (145)—Carburetters and magnetos.
- White & Bagley Co., Worcester, Mass. (316)—Lubricants.
- Whitney Mfg. Co., Hartford, Conn. (123)—Whitney chains.
- Willey Co., New York City (420)—Automobile paints.
- Williams Co., J. H., New York City (173)—Forgings.
- Willard Storage Battery Co., Cleveland, Ohio (310)—Elba lighting outfits.
- Witherbee Igniter Co., Springfield, Mass. (271)—Magnetos and storage batteries.
- Wyckoff Lumber Co., Ithaca, N. Y. (515)—Portable garages.
- Wright Wrench & Forging Co., Canton, Ohio (401)—Wrenches.
- Young, Orlando W., Newark, N. J. (293)—Lubricants.

The Many Considerations Involved in Tire Manufacture

In that earlier experience we learned that to get sufficient strength in the fabric, in which in reality lies the real strength of tire, it was necessary to inaugurate new ideas and practices in fabric construction, says J. C. Cole, vice-president of the Fisk Rubber Co., writing of the points involved in automobile tire manufacture. This gradually was brought about and the makers of cloth have accomplished results that first were considered impossible.

The factors determining the proper make-up of automobile tires, as enumerated by Mr. Cole, are: First, the necessary strength of fabric to carry a certain load; second, the best way of holding together the several layers of fabric necessary to produce the required strength; third, the best way of protecting that fabric from outward injury, and fourth, the producing of an outside wearing surface to give a maximum wear without introducing features that will produce quick injury to the fabric.

"Experience has taught that while fewer layers than are used will furnish the necessary strength," he says, "it is advisable to use a greater number to help protect the

tire from punctures and bursting, or so-called fabric breaks that are liable from sudden blows by hitting stones and other obstacles that are always to be found. There is also a limit to the number of layers that can be used, because too many layers reduce the flexibility of the walls of the tire, especially in the side walls or that portion between the holding beads and the tread portion.

"It is essential that rubber compounds used to hold the layers of fabric together should be such that the action of the fabric will be free and natural, and also that it is soft enough to penetrate the interstices of the fabric and keep the threads from rubbing together and causing friction to destroy the fabric before the tire has seen real service enough to wear it out naturally. The above are the chief reasons why that part of a tire called the carcass fabric is designed and constructed under the present arrangement of parts.

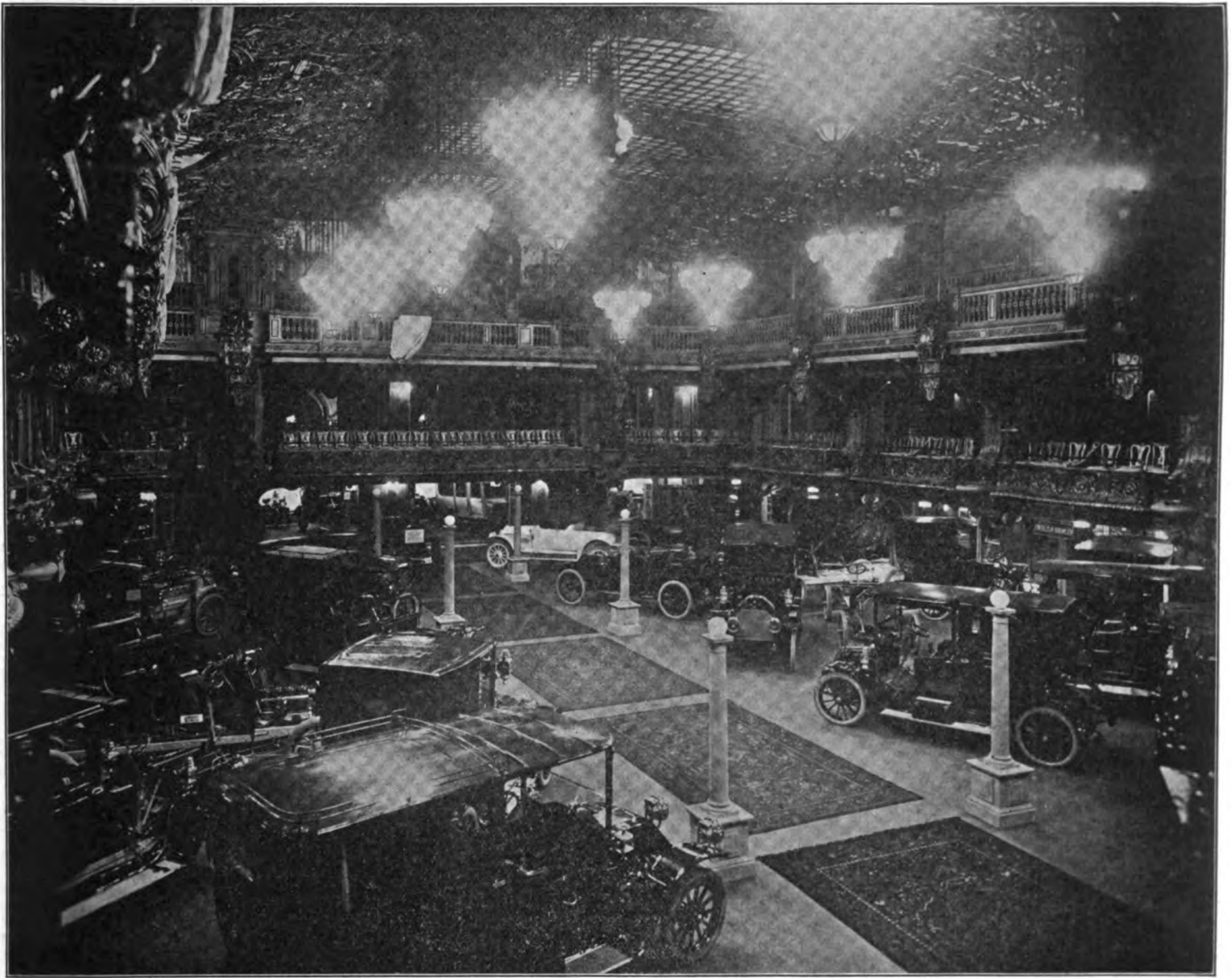
"As it is necessary to protect the carcass fabric from road wear, punctures, etc., there is need of much more covering on that part of the tire coming in contact with the

road; therefore the soft rubber (called the cushion) and an extra layer of fabric (called the breaker strip) is introduced into the construction.

"The outside wearing surface or tread must necessarily be harder and tougher than the inner portions in order to take the wear and not grind or cut off; it must also be capable of withstanding the action of air and moisture to a considerable extent; therefore, on this, as on the carcass fabric, depends a large part of the strength of a tire.

"The vulcanizing or curing of tires consists in subjecting them to a certain heat temperature for a certain period of time in order to unite the several parts into one homogeneous mass and produce its elasticity without which rubber is of no especial value as a wearing agent. In order to attain this end, the several parts of rubber from which the tire is composed must be so compounded as to blend or flow and unite solidly, making of a tire when completed nothing more or less than a wall or rubber in which is embedded fabric, placed in such position as will give the best results."

What 13 Importers Displayed in a Ballroom



GENERAL VIEW OF THE IMPORTERS' "SALON" IN THE HOTEL ASTOR BALL ROOM, NEW YORK CITY

It is probable that many men, and more women, have dreamed that they dwelt in marble halls, but it is a fairly safe guess that few, if any, of either sex ever have conjured mind pictures of an invasion of a gilded and silken draped ball room by motor cars. But whether or no, the invasion has become a reality, and may be seen in all its glory any day this week at Hotel Astor, New York City. Of course, the cars are not snapping or snorting or belching fire or fumes, for the invasion is an invasion of still life; officially it is styled the "Importer's Salon." Thirteen exhibitors form the "Salon," which consists of exactly 39 cars, amply emphasizing the "pocket edition" size of the show, which at least has

the distinction of having gathered together cars from five European countries. The magnificence of the ball room renders borrowed decoration almost unnecessary.

Innovation in body design and equipment constitute the feature of the show. There is little of mechanical novelty apparent, although the so-called "valveless" Knight engines exhibited at the stands of Panhard & Levassor and A. T. Demarest & Co. are popularly esteemed to be novel. As a matter of fact, however, the Knight engine with its sliding valves was first exhibited in Chicago some four years ago, and is an American invention, which, after going abroad, has acquired quite a reputation. A limousine, shown by Panhard & Levassor, has this

style of engine with cylinders $4 \times 5\frac{1}{2}$ inches; the one shown by Demarest is an English Daimler chassis, being of the same design though larger as to cylinder dimensions, which are $5 \times 5\frac{1}{4}$ inches.

Renault Freres have the largest single exhibit, nine complete cars of varying sizes and styles going to make it up. Chief interest centers around a four-cylinder, 35-45 horsepower, front-door limousine, styled the *Berline de Voyage*, and closely resembling a Pullman sleeping car in the completeness of its equipment. Among other things, it is fitted with a "sure enough" ice box which will hold ice and bottles. The body is by Moore & Munger, as is another of cabriolet style which is almost as complete

and which is mounted on a six-cylinder, 40-50 horsepower chassis.

De Dion Bouton cars are well represented, and include a seven-passenger, torpedo touring car with an eight-cylinder, V-shaped motor. The gasoline supply is carried in a tank built into the scuttle dash. The method of attaching the differential to the frame is still adhered to. A six-cylinder, 18-24 horsepower car with a Jensen tourabout body forms part of the C. G. V. exhibit and is noticeable because of its extremely high scuttle dash. Double rear tires and a distinctive type of radiator mark the Metallurgique car exhibited by Warwick Wright.

Two racing cars are included in the exhibits of the S. P. O. and Benz companies respectively. The Benz racer is "the" Benz—the one with which Bruce-Brown won the Grand Prize race. Also included in the Benz exhibit is a four-cylinder, 50 horsepower touring car, every part of which is painted a chaste white. The motor hood is gracefully curved up to meet the scuttle dash and makes a pleasing effect. The same effect is also obtained on the four-passenger, 30 horsepower Benz, with a German torpedo body. The "simplest engine made" is the claim made for the four-cylinder 38 horsepower motor in a Peugeot car and the looks seem to substantiate the claim; every unnecessary part has been eliminated, and the whole presents a compact and clean-cut appearance. The latest in cabriolet design is shown in the collapsible body of this type with which a six-cylinder, 45 horsepower Napier is fitted, which may be converted from a completely enclosed car to one as open as "all outside" in a few minutes. A six-cylinder, 65 horsepower Napier chassis with Rudge-Whitworth detachable wire wheels and styled the American Special also is shown at the stand of Messrs. Glentworth and Jackson.

Though the show is respectably patronized during the daylight hours, there never has been a moment when breathing space was at a premium; most of the spectators, however, "drop in" after the theater. Saturday night will see the removal of the cars to environments more natural, and the ball room will again be relegated to the comparatively obscure uses of society.

The exhibitors and the cars which they display are as follows:

Benz Automobile Import Co. of America—Five Benz 4-cylinder, water-cooled, shaft-driven cars. One 50 horsepower, seven-passenger limousine; two 30 horsepower limousines; one each 30 and 50 horsepower, torpedo model touring cars; one chassis, and the Grand Prize racing car.

Burr & Co., New York City—One 4-cylinder, 18 horsepower, water-cooled, shaft-driven Benz, and one 4-cylinder, 14 horsepower, water-cooled, shaft-driven DeDion brougham.

C. G. V. Import Co., New York City—Four C. G. V. water-cooled, shaft-driven cars; one each 4-cylinder, 12 horsepower lan-

daulet, and 16-20 horsepower coupe; one 6-cylinder, 18-24 horsepower limousine, and one 6-cylinder, 18-24 horsepower, small tonneau touring car.

Cesare Conti, New York City—Two 4-cylinder, water-cooled, shaft-driven, S. P. A. cars; one 50-60 horsepower racing car, and one 15-20 horsepower limousine.

DeDion Bouton Selling Branch, New York City—Three DeDion Bouton water-cooled, shaft-driven cars; one each 8-cylinder, 50 horsepower, front-door touring car; 4-cylinder, 14 horsepower limousine; 4-cylinder, 40 horsepower touring car, and one chassis.

Demarest & Co., A. T., New York City—One 4-cylinder, 20-30 horsepower, water-cooled, shaft-driven, Itala limousine; one Itala chassis, one English Daimler chassis with Silent Knight motor.

Ducasse & Co., Henry, New York City—Two Darracq water-cooled, shaft-driven cars; one 4-cylinder, 24 horsepower town car, and one 6-cylinder, 60 horsepower touring car.

Glentworth & Jackson, New York City—One 6-cylinder, 45 horsepower, water-cooled, shaft-driven Napier car and one chassis.

Panhard & Levassor, New York City—Three water-cooled, shaft-driven, Panhard cars; one 4-cylinder, 14 horsepower, collapsible landaulet; one 6-cylinder, 35 horsepower landaulet; one 4-cylinder, 30 horsepower limousine with "valveless" engine, one chassis with "valveless" engine.

Peugeot Import Co., New York City—One 4-cylinder, 38 horsepower, water-cooled, shaft-driven town car.

Quinby & Co., Newark, N. J.—Three 4-cylinder, water-cooled, shaft-driven Isotta-Fraschini cars; one closed-front, five-passenger touring car; one seven-passenger limousine, and one brougham.

Renault Freres Selling Branch, New York City—Nine Renault, water-cooled, shaft-driven cars; one 6-cylinder, 40-50 horsepower cabriolet; one each 4-cylinder, 35-45 horsepower, closed-front limousine; 25-35 horsepower American Special touring car; 25-35 horsepower limousine, 12-16 horsepower, closed-front limousine; 12-16 horsepower, three-quarter landaulet; 25-35 horsepower landaulet-limousine; 14-20 horsepower limousine; 12-16 horsepower, dropped-frame limousine, and one chassis.

S. P. O. Automobile Co., New York City—One 4-cylinder, 18-24 horsepower, water-cooled, shaft-driven S. P. O. racing car, and one 4-cylinder, water-cooled, shaft-driven, 16 horsepower, Vinot brougham.

Wright, Warwick, New York City—One Metallurgique, 4-cylinder, water-cooled, shaft-driven car.

Teamster Fined for Obstructing Highway.

In an effort to establish the principle that the driver of a slow-moving vehicle has no legal right to obstruct the highway to the disadvantage and inconvenience of

the driver of a more rapidly moving vehicle, Benson F. Snyder, of Newton, N. J., brought suit for damages against James Ross, an Ogdensburg teamster. The suit was based upon Ross' refusal, on two occasions, to turn out to permit Snyder to go by in his automobile. Snyder alleged that Ross obstructed the highway and even drove in a zig-zag across the road so as to keep the automobile from getting past. According to the regulations of the highway department, Ross could have been fined twice the sum of \$2, and it was this sum of \$4 that Snyder sued for. The jury which heard the testimony on December 27 evidently agreed with the automobilist, for it returned a verdict for \$4 in his favor.

Truck Driver's Suit Against Employer.

In a complaint filed in the Circuit Court of Portland, Ore., Walter H. Hayes, a non-union teamster, asks judgment for \$10,000 against his employer, the Oregon Auto Dispatch Co., alleging that he was not sufficiently warned against the danger he was incurring in undertaking to drive a motor truck belonging to this company during a recent teamsters' strike. He therefore, considers the company responsible for the various things that happened to him when he was attacked by strikers and beaten severely over the head with a gas pipe. A portion of his skull was removed at the hospital, and he says he is in danger of losing his eyesight.

Gets Three Years for Manslaughter.

Al Schultz, a chauffeur of Omaha, Neb., who was found guilty of criminal negligence in causing the death of William Krug, a resident of the same city, has been sentenced to three years' imprisonment in the penitentiary. In the ruling against the application for a new trial, and in passing sentence, the judge said: "I think the wickedest thing we see on the streets is the carelessness of some automobile drivers and the absolute lack of consideration for anyone but themselves that a good many automobile drivers show."

Queer Scalping of Washington Women.

One of the most unusual accidents that ever has happened to a woman motorist occurred on Sunday last in Seattle, Wash. Mrs. A. W. Milroy was driving her small runabout when something went wrong with the machinery. She jumped from the car and looked under the tonneau to ascertain the cause of the trouble. Her hair caught in the revolving shaft, and her entire scalp was torn from her head.

Weather "Kills" Guttenberg Racemeet.

Jupiter Pluvius intervened on Monday last, and as a result grippe and sniffles probably are less prevalent than might have been the case had the racemeet which was to have been held on the Guttenberg (N. J.) track been run off as scheduled.

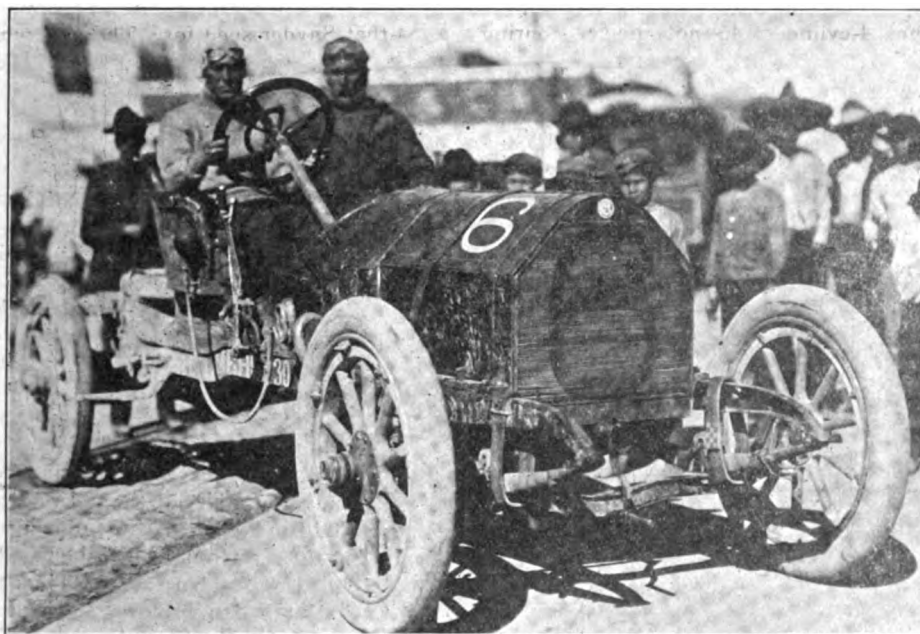
REAL ROAD RACING IN MEXICO

Enormous Crowd Sees Mexico-Puebla Contest on Christmas Day—An American Car Shares the Honors.

Mexico City, Dec. 26.—There was very much of a road race here yesterday, Christmas Day. If the Mexicans were given to that sort of thing, they might have called it "the Vanderbilt of Mexico," and with

dered by the higher officials of the state. For not only did the governor of Puebla permit the roads of his district to be used as a race course, but he actually had them repaired and put in fairly good shape previous to the race at his own expense, and, to crown it all, acted as one of the timers at the finish in Puebla, while the governor of the Federal District was one of the starting judges in the City of Mexico. More active and useful state officials hardly can be asked for than these two governors,

through the bed of the rapidly drying Texcoco Lake. Beyond this lake and rising on a 10 per cent. grade the road enters the mountains, in places cut from the solid rock and curving and twisting along the sides of barrancas, some of which are of immense



H. B. HAM (CHALMERS), THE VICTOR IN CLASS A



THE CHIEF TROPHY AT STAKE

some reason, too, for it was a big event, and it set a large part of the republic by the ears. It was the second annual race from Mexico City to Puebla—the two largest cities in Mexico. The distance was 160 kilometers, or precisely 100 miles, and no Vanderbilt Cup course or Grand Prize course ever presented such difficulties as lay within those hundred miles.

The rules had been made as simple as possible, the entrants being divided into two classes: Class A, for cars of less than 231 cubic inches displacement, which was won by H. B. Ham, in the Chalmers, in 3:14; and Class B, for cars over 231 cubic inches, which went to U. Bassini, driving a Protos, 27 horsepower car, in 2:53. There was no limitation as to stock cars, the race being a free-for-all event within the limits of the two classes. The prizes were solid silver trophies offered by two Mexican newspapers, "El Automobile en Mexico" and "El Imparcial," which became the property of the owners of the winning cars in each class, while gold medals were awarded to the drivers of the three cars making the fastest time in each class.

The race was held not only on a high holiday, but on Sunday, which would seem of especial significance to Americans, and was furthered by the active assistance ren-



U. BASSINI (PROTOS), WINNER OF CLASS B

Senor General Mucio P. Martinez and Don Guillermo de Landa Escadon.

The first 40 kilometers of the road is constructed of red volcanic rock forming a causeway for a considerable distance

depth. Beyond Calpulalpan the descent towards Puebla commences, and just before reaching San Martin the broad but shallow Rio Atoyac must be rushed by the cars.

Of the eight cars entered in Class A, only six lined up in front of the office of "El Imparcial," Mexico City, at 8:30 o'clock a. m., and proceeded in slow procession to San Lazare, a suburb, where the actual start was made. Promptly at 9 o'clock M. Ortiz, in the little Metz, was sent off, the others leaving at four-minute intervals, the last to get away being H. Shutz, in a White 20. Four minutes later the powerful news-

paper car left, while Class B cars made ready for their start. They, too, were sent off at four-minute intervals, beginning with C. Salvioni, in the Protos 18, and finishing with L. de la Pena, in a 27 horsepower car of the same make.

The occupants of the press car had a good opportunity of noting the progress of the little cars. At 9:45 o'clock the Metz was passed, which had run into a ditch and had been wrecked completely. A few minutes later the White No. 7 was passed while Shutz, its driver, was changing spark plugs. Immediately afterwards the Protos was overtaken, its steering wheel broken. Although Pinchetti, the driver, made temporary repairs, they were of insufficient strength and later the car overturned while taking a curve at high speed. Soon afterwards the Buick and Lancia were overtaken, which left only Ham, in the Chalmers, in front, and it was not until 20 kilometers from Puebla that this car, too, was caught up with. Ham easily retained his lead, finishing the 100 miles in 3:14, excellent time when the deep sand, rocky roads, steep ascents and winding mountain roads are considered. H. Shutz, in the White 20, was second, in 3:24, while the only other car to finish was the Buick, driven by J. Velasquez, which had experienced lots of tire and other minor troubles, and needed 6:48 to complete the trip.

In Class B the winner evolved in U. Bassini, driving a 27 horsepower Protos, who covered the distance in 2:53, the record time for the trip, and just two hours

faster than the time needed by the winner of last year's race. Second place fell to the Peerless 40, driven by H. Pagliel, with 2:57; and third place was captured by I. Limantour, driving a Packard 30, in 3:54. The Buick 30, piloted by E. Lopez, reached the finish 3:30 after the start, and claimed third prize, but was disqualified for deliberately and wilfully obstructing the passage of other cars on the narrow road. The



THE RIVER ATOYOC, THROUGH WHICH THE RACERS DASHED

closeness of the race among cars in class B is best shown by a comparison of their time of passing through San Martin, 120 kilometers from Mexico City. U. Bassini, in the Protos No. 17, needing 136 minutes;



THE GREAT THROG THAT GATHERED IN PUEBLA

Pagliel, in the Peerless, 138 minutes, and Limantour, in the Packard, 136 minutes. Of the 13 contenders who started in Class B eight reached Puebla, those suffering accidents being: L. de la Pena, in the Protos, which struck a rock and broke off a rear wheel, and Braniff, Packard, and Zavatarelli, Lancia, whose cars were disabled by colliding with the buttresses of bridges. A.

Braniff, the driver of the Packard, sustained serious injuries in the collision. The Packard, driven by Segura, and Lozier, driven by De Lara, quit after 100 kilometers.

After the race a banquet and ball were held in honor of the drivers and the owners of the cars at the government palace in Puebla. A great outpouring of the public witnessed the contest; estimates place the number at 100,000, one of the largest crowds ever collected in Mexico.

The order of finish was as follows:

Class A—First, H. B. Ham, Chalmers 30, 3:14; second, H. Shutz, White 20, 3:24; third, J. Velasquez, Buick 18, 6:48. M. Ortiz, Metz 12; A. Pinchetti, Protos, 8-10, and C. Ghiglini, Lancia 30-30, also ran.

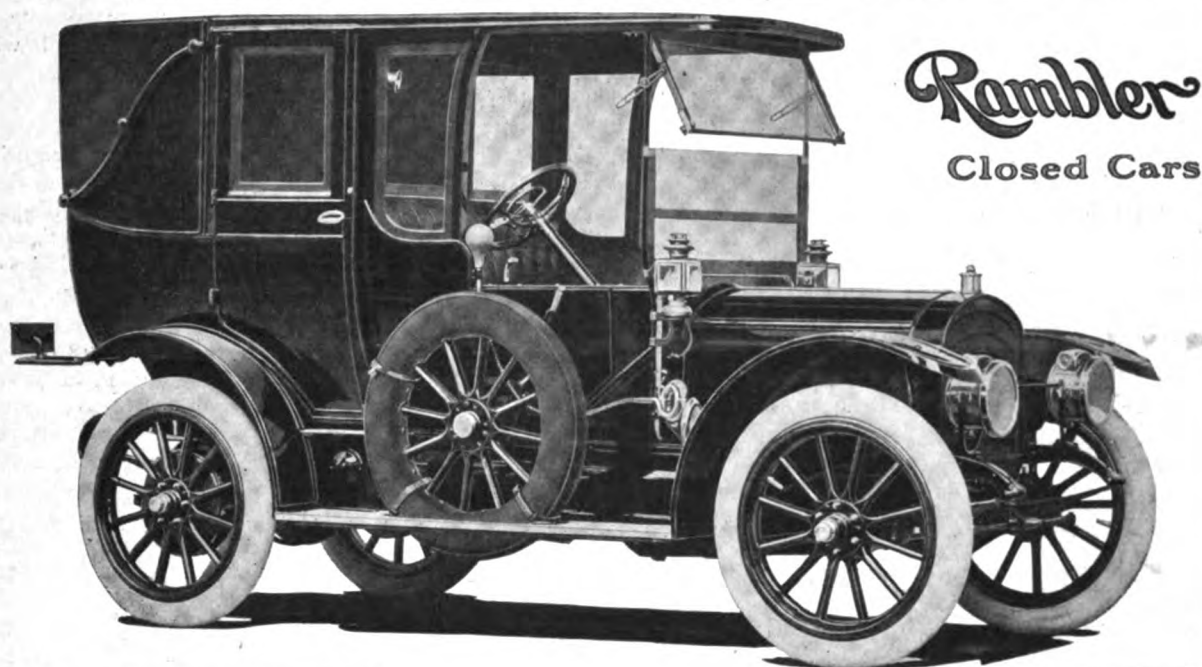
Class B—First, U. Bassini, Protos 27, 2:53; second, H. Pagliel, Peerless 40, 2:57; third, I. Limantour, Packard 30, 3:54; fourth, C. Leon, Zust 40, 3:55; fifth, Martinez Arauna, Fiat 28-40, 4:41, and sixth, A. Meneses, Fiat 24-45, 5:00. C. Salvioni Protos 18; A. Braniff, Packard 18; L. Zavatarelli, Lancia 30-45; V. Segura, Packard 30; J. de Lara, Lozier 45; L. de la Pena, Protos, and E. Lopez, Buick 30 (disqualified), also ran.

Clubs and Club Elections.

Automobile owners of Minneapolis Minn., have organized the Minneapolis Motor Club and elected the following officers for the first year: President, R. J. Randolph; vice-presidents, A. E. Thompson and C. S. Marshall; secretary, A. N. Smith; treasurer, L. E. Horton; directors, F. J. MacArthur, Harvey Haynes, A. F. Chase;

chairman contest committee, Harold Vorce; chairman technical committee, H. E. Wilcox.

Jamestown (N. Y.) automobilists have organized the Jamestown Auto Club and elected the following officers: President, W. W. Hunt; vice-president, F. P. Hall; secretary, W. E. Groucher; treasurer, Brewer D. Phillips.



Rambler
Closed Cars

Rambler
Sixty-three
Town Car

WITH a closed car the charm of motoring may be enjoyed throughout the winter. Daily rides may be taken in comfort, regardless of the weather. Necessary errands become a pleasure. With storm curtains between the glass front and cab seats, protection is afforded all passengers. On pleasant days the top may be folded back. The Spare Wheel eliminates worry about tire trouble. It can be so easily and quickly changed, regardless of snow, water or ice. The thirty-six-inch wheels with $4\frac{1}{2}$ -inch tires; seven-eighths rear springs, with shock absorbers, produce gratifying comfort. The trimming is leather inside and out. Seating capacity seven. Flexibility provided by the offset crank shaft and straight-line drive, that permits operation in high gear no faster than a man usually walks, particularly adapts this car to town use.

Rambler closed cars are made in landaulet, limousine, town car and coupe styles. You may inspect them at Rambler branches and dealers stores in principal cities.

The Thomas B. Jeffery Company

Main Office and Factory, Kenosha, Wisconsin
Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco

New York Dealers: The Rambler Automobile Co.
of New York, 38-40 West 62nd Street, New York

MAKING GOOD MOTORS BETTER

How the Builders of the Continental Engines Have Performed the Work—
Features of the 1912 Product.

While automobile manufacturers are engaged in producing their current models, it is well known that their designers are at work upon the next succeeding models. It is not unnatural, therefore, that the pro-

and, particularly in the smaller sizes, with what rightfully may be termed long strokes. Thus the two smaller motors, which are designated as type C, are of $3\frac{3}{4}$ by $5\frac{1}{4}$ and $4\frac{1}{8}$ by $5\frac{1}{4}$ inches bore and stroke, respectively. The next size larger, type E, as it is called, has a bore and stroke of $4\frac{1}{2}$ by $5\frac{1}{4}$ inches. The new model T, on the other hand, is made with cylinders of 5 by $5\frac{3}{4}$ inches, and also in a still larger size, with $5\frac{1}{2}$ by $5\frac{3}{4}$ -inch cylinders.

shafts, and have cam shafts that are drop forged with the cams integral. The new model T motors are built with large valves arranged on opposite sides, with the cylinders cast in pairs.

In addition to the lengthened stroke, the new motors possess such other modern and approved features as enclosed valve and silenced valve mechanism, specially designed and lubricated timing gears, which likewise are almost noiseless in action, bar-

NOT EVEN ROUGH GOING WITH HEAVY LOADS STOPS THE MODERN MOTOR TRUCK



ducers of components, practically should be working at least two years ahead of time. This explains why the new line of motors, which the Continental Motor Manufacturing Co., Muskegon, Mich., just has brought out, should be designated as the patterns of 1912.

In common with the general tendency among American automobile builders to get away from the "square" type of motor, which formerly prevailed to a general extent, and to incline toward the long-stroke motor which is so prevalent in Europe just now, the new Continental line is built entirely with a liberal bore-to-stroke ratio,

The distinction between the models is not based upon size entirely, but also upon the style of construction. The two smaller motors of the C classification are of the block type, and are suitable for touring cars of moderate size and for light commercial vehicles. They will be supplied with either pump or thermo-syphon circulation. The E style of engine, on the other hand, retains the traditional Continental form, and is of the "L" pattern, with valves all on one side, and is built to conform to the demand for a "clean" engine, yet one that is perfectly accessible. Both these types are fitted with three bearing crank

rel crank cases and positive lubrication. The latter feature represents the outcome of much careful study of the lubrication problem, the manufacturers in question claiming to have been the first in this country to employ the self-contained oiling system. The new models are equipped with the system in improved form, and so constructed that the rate of lubrication remains constant regardless of gradient. In the larger models multiple geared pumps are employed which ensure positive delivery to all feeding points. Particular attention also has been paid to the elimination of all oil joints.

RECENT PATENTS.

972,281. Filtering Apparatus for purifying Gasolene and other liquid fuels. Zeanith H. Stamets, Auburn, Ind. Filed June 10, 1909. Serial No. 501,396.

1. A device of the character described, comprising a cylinder having an outlet port for the discharge of purified liquid fuel at one side of the upper end of the cylinder, an inlet port for the supply of liquid fuel at the upper end of the cylinder at the opposite side from the outlet port; means for causing a whirling downward circulation of said liquid fuel in passing through the casing, and separating the foreign particles through the filter, and means for regulating a sediment chamber and causing the purified liquid fuel to pass centrally downward from the liquid fuel and depositing them in the flow of liquid fuel through the filter and out of the same.

972,282. Liquid Fuel Purifier and Gaged Governor. Zeanith H. Stamets, Auburn, Ind. Filed March 25, 1910. Serial No. 551,501.

1. In a device of the character described, a casing provided with a sediment chamber in its lower end and an apertured diaphragm covering said sediment chamber, a supporting base mounted on the side of said casing and having an inlet fuel supply passageway and means for connecting it with a main supply tank, an outlet passageway and means for connecting it with a carburetter or other point to be supplied, a coil located in said casing and having its upper end connected with one end of said inlet passageway and its lower end projecting into said sediment chamber, said coil having perforations on the upper side

of its convolutions, a screen separating the lower portion of said casing from the upper portion, the inner portion of the outlet passageway communicating with the upper portion of the casing above said screen, a gauge cylinder forming an auxiliary reservoir mounted on the top of said casing, and means for controlling the passage of liquid from said casing to said auxiliary reservoir.

972,512. Starting Gear of Internal Combustion Motors. Paul Daimler and Alfred Vischer, Unterturkheim-Stuttgart, Germany, assignors to Daimler Motorenengesellschaft, Unterturkheim-Stuttgart, Germany.

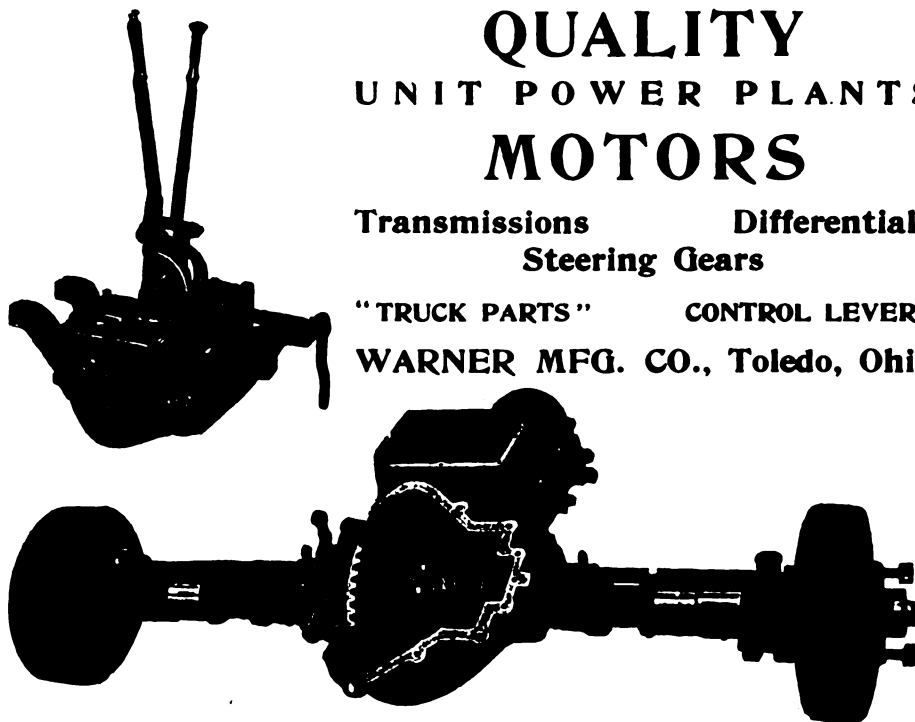
Filed November 12, 1908. Serial No. 462,200.

1. In combination with the cylinders of a motor, a starting device comprising a carburetter, a starting pump, a fuel reservoir, a suction pipe leading from said carburetter to said pump, a pressure pipe leading from said pump, branch pipes from said pressure pipe leading one to the fuel reservoir and another to the motor cylinder, and a switch cock at the branching point between said pressure pipe and the branch pipes for the purpose of establishing communication as desired between the pump and the fuel reservoir or between the pump and the engine cylinders.

QUALITY UNIT POWER PLANTS MOTORS

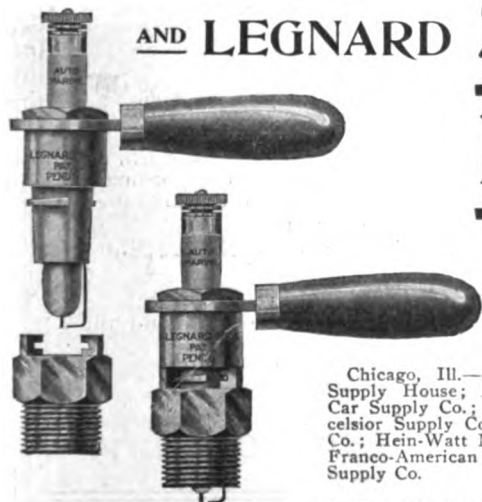
Transmissions Differentials
Steering Gears

"TRUCK PARTS" CONTROL LEVERS
WARNER MFG. CO., Toledo, Ohio



The Bush Radiator
THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

Auto-Marine AND LEGNARD Spark Plugs



\$1.50 Each

DEALERS—The following Jobbers carry this line in stock. Order TO-DAY.

Chicago, Ill.—Auto Parts Co.; Chicago Auto Supply House; Automobile Supply Co.; Motor Car Supply Co.; Standard Auto Supply Co.; Excelsior Supply Co.; Hibbard, Spencer, Bartlett & Co.; Hein-Watt Mfg. Co.; Marshall Field & Co.; Franco-American Supply Co.; Manhattan Elect. Supply Co.

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New York City—F. A. Baker & Co.; Motor Car Equipment Co.; Universal A. & M. B. Supply Co.; Jas. L. Gibney & Bro.; Mutual Auto Accessories Co.; Chas. E. Miller.

Philadelphia—Jas. L. Gibney & Bro.; Auto Brokerage Co.

Boston—Stuart-Howland Co.; The Angier Co. Washington, D. C.—Rudolph & West.

Omaha, Neb.—Nebraska Buick Co.; Powell Supply Co.; Maxwell-Briscoe Omaha Co.; Baum Iron Co.

Lincoln, Neb.—Nebraska Buick Co.

St. Louis, Mo.—Behen-Faught M. C. Equip. Co.; Phoenix Auto Supply Co.; Enterprise Auto Parts Co.

Kansas City, Mo.—Kansas City Auto Supply Co.

Pittsburg, Pa.—Kaufmann Bros.

Minneapolis, Minn.—Tri-State Supply Co.; United Motor Supply Co.

Detroit, Mich.—Detroit Motor Car Supply Co. Baltimore, Md.—Coggins & Owens; Loane-Hiltz Eng. Co.

Norfolk, Va.—William H. Grover.

Atlanta, Ga.—Alexander-Seewald Co.

Tampa, Fla.—Joe B. Johnson.

Louisville, Ky.—Prince Wells & Co.

Topeka, Kan.—Jas. M. Padgett.

Salina, Kan.—Lee Hardware Co.

Denver, Col.—Denver Auto Goods Co.; E. R. Combe.

Oklahoma City, Okla.—Oklahoma Motor Equip. Co.

Portland, Ore.—Manufacturers Sales Co.

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\$1.00 Each

Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of TIRES INFLATED TO THE RIGHT PRESSURE. He insists that this is tire economy and SAVES YOU MONEY. How do you know what pressure you have in your tires?

A Schrader Universal Tire Pressure Gauge



Will tell the exact pressure in your tires at any time, day or night, by simply holding this GAUGE to your valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the GAUGE can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the INDICATING SLEEVE can be pushed back into the GAUGE with your finger. No catches or snaps to operate or get out of order.

This GAUGE is of great value to the user of DEMOUNTABLE RIMS, as the SPARE WHEELS carried must always be in readiness, and in order to be so they must at all times have the tires properly inflated. This can easily be ascertained without any exertion or inconvenience, by the use of the SCHRADER UNIVERSAL TIRE PRESSURE GAUGE.

This GAUGE is 2½ inches long over all, short enough to apply to the smallest diameter of wheel, and can easily be carried in the vest pocket, or the change pocket of your trousers. It is enclosed in a leather case, keeping the gauge free from dirt and other particles accumulating in the pockets.

Price, \$1.00 each. READY for delivery NOW. GUARANTEED SIMPLE AND ABSOLUTELY ACCURATE. Can be obtained from all tire manufacturers, jobbers and the dealers, or

A. SCHRADER'S SON, Inc., 28-32 Rose St., New York City

ESTABLISHED 1844

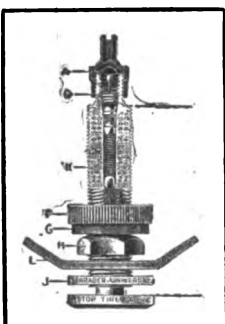
Schrader Universal Valves

Trade-Mark Registered April 30, 1895

SIMPLE AND ABSOLUTELY AIR TIGHT, SCHRADER MOTOR TIRE VALVES, as shown in cut, are the regular equipment for G. & J. style Motor Tires, whether used on ordinary rims or demountable rims, such as Michelin or Continental Ready-Flated Tires, and are also used on Hartford Detachable, Fisk Detachable and New Goodyear Detachable Motor Tires.

Our No. 777 Motor Tire Valve is the standard for 2½-in. and 3-in. Tires, and our No. 725 Motor Tire Valve is the standard for tires larger than 3-in.

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NEW YORK CITY

Strongest Built Car



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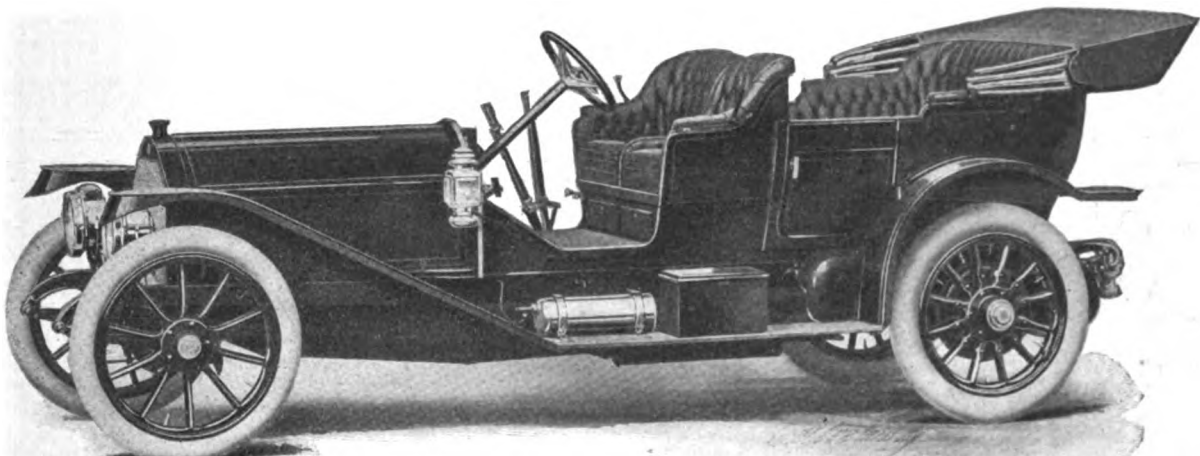
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UNINTERRUPTED SERVICE UNDER ALL CONDITIONS

That's What We Offer—That's What We Guarantee in All Palmer-Singer Six Cylinder, Sixty Horsepower, Four Speed Forward and Reverse, Touring Cars.

The strongest built car in the world—withstands the extra strain caused by those not entirely familiar with automobile operation—no amateur can hurt the mechanical construction of a PALMER-SINGER.



We invite, in fact we challenge, comparison by the most critical and expert motorists, with any other high-class luxuriously appointed car, regardless of price or make.

Our guarantee of uninterrupted service means something—it is sincere—it takes effect the moment a car leaves our factory and is continuous—it is backed by men of unquestionable integrity—men whose word is their bond.

The element of chance does not enter into the choice of a PALMER-SINGER; you should at least investigate it and our claims for it before purchasing any car.

Our literature is most interesting and instructive; a postal will bring it to your address.

PALMER & SINGER MANUFACTURING COMPANY, Long Island City, N. Y.
1620 Broadway, New York Licensed under Selden patent. **1321 Michigan Avenue, Chicago**

ED. M. FOWLER, Western Sales Manager, 533 Van Ness Ave., San Francisco, Cal.

In line with our guaranteed service policy, we are now making some radical changes in many of our agencies. We invite correspondence with prospective representatives of high standing—those who can conduct our business along the highest class lines and not only make, but **KEEP** thoroughly satisfied owners.

FRONT **AXLES** REAR
OF QUALITY

Let us help in solving that
MANUFACTURING PROBLEM

By furnishing your axle equipments in carload lots as you need them and when you need them.

Our standard equipments include all the improved types in use.

I beam or tubular fronts, chain or bevel drive rears, cup and cone-annular or roller type bearing.

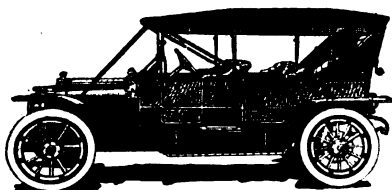
We are specialists in this line and our experience is at your disposal.

THE AMERICAN BALL BEARING CO.

L. S. & M. S. Ry. and Edgewater Park
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WRITE FOR INFORMATION ABOUT

THE SELDEN CAR FOR 1911



With complete touring equipment, from \$2250 to \$2800

Good territory still open for live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.
GEO. B. SELDEN, Pres. Licensed under Selden patent

The Selden Car stands for every desirable development in the automobile—from the powerful perfectly constructed engine to the evenly balanced quality parts that go to make the finished car.

A wide range of body styles and prices. Roadster, touring and torpedo bodies. New four and six passenger torpedo bodies with fore-doors.



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"The World's Best"

Agents—Territory for a truck with a famous record means big business from the jump.

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THE

ELECTRIC



LIGHTING

SYSTEM

PUTS ARTIFICIAL SUNLIGHT
AHEAD OF YOUR CAR

Send for Bulletin

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154 Nassau Street, New York

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INVADER OIL
 THE OIL THAT GRAPHITIZES
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THE SPRINGFIELD TOP
 (Pat. 1895)
SPRINGFIELD METAL BODY COMPANY
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Locomobile Cars for 1911
 Complete information furnished on request.
The Locomobile Company
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 Licensed under Selden Patent
 The White Line Radiator Belongs to the Stearns.

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 Less Fuel—More Power
 Let us tell you all about it.
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AUTO PUMP
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CASS Motor Truck **\$1950**
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Spring Company
 SPECIALISTS IN
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LASCO FOLDING GLASS FRONT
 Simple, effective, correctly designed mahogany finish wood frame—trimmed in brass—3-16 crystal plates—steel stay rods—bottom of frame shaped to dash of any standard automobile—can be attached easily and quickly. We make the London Tops. Write for details and prices.

LONDON AUTO SUPPLY CO.,
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KOEHLER "40"
 \$1650
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The one new car of the year
 is
 Howard E. Coffin's Masterpiece
THE HUDSON "33"

SAVE YOUR TIRES
 by attaching to your Air Pump
SAFETY TIRE GAUGE
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CHICAGO AUTO TOP CO. (Inc.)
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High Grade Auto Tops
QUICK DELIVERIES
FACTORY CONTRACTS A SPECIALTY
 Place Your Orders Now for 1911

HESS - BRIGHT
Ball Bearings
 Highest in price, but by far the lowest in final cost.
Hess-Bright Manufacturing Co.
 2109 Fairmount Ave. Philadelphia, Pa.

WANTS AND FOR SALE

15 cents per line of seven words, cash with order.
 In capitals, 25 cents per line.

FOR SALE—Pullman Special, 40 horsepower, 121-inch wheel base, six passenger demi-tonneau, run about 1,000 miles; bought to order late in the season of 1909 and has been stored all winter; special cloth lined top, two extra tires, tire cover, double brass tire irons, full lamp and tool equipment, Bosch magneto, upholstered in full French hand buffed leather. Looks like new. Will sell at sacrifice. **J. A. KLINE,** General Manager, **B. C. K. Motor Car Co.,** York, Pa.

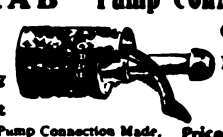
FOR SALE—Two gentlemen's broadcloth overcoats, lined throughout with Canadian mink; beautiful Persian lamb collars; sizes 38-40 and 42-44. Look exactly like new. Sacrifice \$35 each. Worth \$125. Two elegant cinnamon bear robes, brand new, sell the pair \$30. Also handsome lady's long fur coat, satin lined, size 36-38, like new; cost over \$100; sacrifice \$35. Call or write **E. ROBERTS,** 104 West 114th street, New York City.

WANTED—Competent man to take charge inspection of automobile engines in large plant who has had large experience in this work. Good salary and opportunity for the right man. Address **F. L. REYNOLDS,** 218 West Superior street, Chicago, Ill.

FOR SALE—One Rider Lewis, 6 cylinder; one Rider Lewis, 4 cylinder; new. **M. E. WINANS,** 291 Halsey St., Newark, N. J.

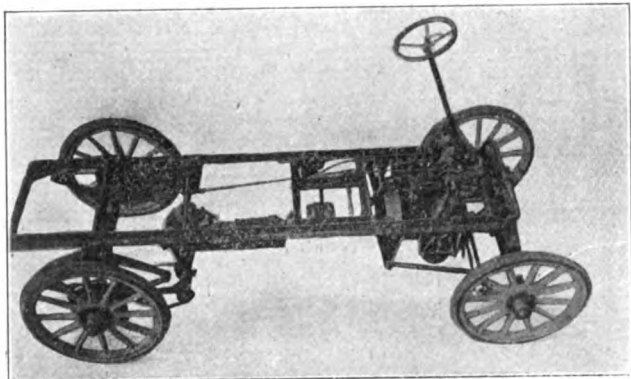
Repair tire and casing cuts with the
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DURABLE — ECONOMICAL — EFFICIENT
 Price with Repair Material and Garage Kit, **\$15.00**
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"GRAB" Pump Connection
 Clamps on No Screwing Stay Tight
 Cannot Loosen Fits any Valve Instantaneous
 No Better Pump Connection Made. Price each 25c
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The Packers MOTOR TRUCK
 The most successful and economical commercial power wagon ever built
 3 sizes—1-ton, 2-ton and 3-ton
 We want a few more live dealers. Write for territory
THE PACKERS MOTOR TRUCK CO., Pittsburgh, Pa.

The MOTT WHEEL WORKS
 Utica, N. Y.
Axles, Hubs and Rims
R. B. ABBOTT SALES CO.
 Majestic Building, Detroit



WHERE THE MONEY GOES— Repairs

It costs from \$25 to \$50 to tear down the average truck, clean and examine its parts and re-assemble—exclusive of the actual work of repairs. It costs more to get at the defective part than it does to make it right—BECAUSE OF THE WAY THEY ARE PUT TOGETHER.

Economy trucks will save 75% of your repair bills—BECAUSE OF THE WAY THEY ARE PUT TOGETHER—Unit assembly.

Economy engines can be entirely removed or replaced in 45 minutes; transmissions in 35 minutes; radiators in 15 minutes, and jack-shafts in 20 minutes, either part without disturbing the other two and all without disturbing the body.

CONVENIENT? Nothing like it on the market.

ECONOMICAL? After all, it is not the first cost, but the repairs and up-keep that staggers the owner.

The Economy elements are the best the market affords; Davis motors, Ball transmissions, Muncie jack-shafts, Tut-hill springs, Sheldon axles, Hayes wheels, Long radiators and Foster steering gears.

Bodies to suit your requirements.

IF YOU CAN SUGGEST ANY IMPROVEMENTS ON THIS TRUCK, WE WILL GLADLY PAY FOR THE INFORMATION.

The Economy truck is not the development of an engineer's idea; it is the result of experience. It is built from the users standpoint. We've been at it four years.

Two capacities only, 1000 lbs. and 2000 lbs.

We would like to correspond with garage and repair men with the object of establishing Economy Maintenance Stations.

We do not require the purchase of a demonstrator.

ECONOMY MOTOR CAR COMPANY

Bissel and Cass Sts.

JOLIET, ILL.



AJAX TIRES

Need no better recommendation than our exclusive 5000 Mile Guarantee.

IT is the maker's confidence in his product that counts—not some one's promise or say-so.

TIRE insurance and fire insurance should be bought on the same basis—a definite guarantee.

THE Ajax Guarantee assures you of more mileage than any other and is the only tire backed by a similar amount of confidence.

Write for our free booklet: "Common Sense Lessons in the Care and Preservation of Tires."

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York
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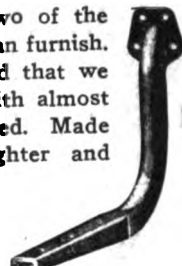
New York, Boston, Philadelphia, Atlanta, Detroit, Chicago, Kansas City, Minneapolis, Denver, Col.; Seattle, Portland, San Francisco, Los Angeles, Milwaukee, St. Louis.

Pressed Steel Step Hangers



With ears for attaching mud apron.

These cuts show only two of the various styles of heads we can furnish. Our dies are so constructed that we can make these hangers with almost any drop or extension desired. Made from 5-32 inch steel—lighter and stronger than forgings.



Plain pattern.

Samples or blue prints cheerfully furnished on request.

WE ALSO MANUFACTURE

**Stampings, Wheel Flanges
Hub Caps, Brake Drums
Ball Cups and Retainers**

(Hardened Ready for Hubs)

Special Stampings Made to Order. Heavy and Difficult Forming and Drawing Work of All Kinds.

Prompt Delivery Guaranteed. Prices Right.

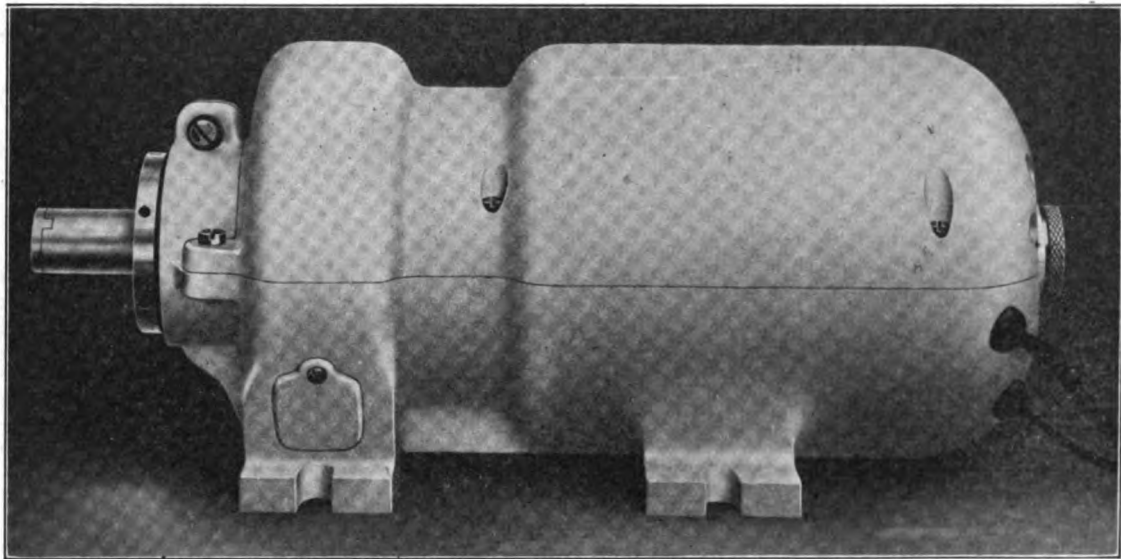
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GRAY & DAVIS

present for the second year their

Dynamo Lighting System

for automobiles and announce that their **CONSTANT LOW SPEED DYNAMO, Shunt Wound** when charging batteries, **Compound Wound** when lighting lamps, **IS A SUCCESS.**



Gray & Davis Dynamo System, Type C, one-half actual size—weight complete as shown 19½ lbs.

BECAUSE IT DOES WHAT NO OTHER DYNAMO SYSTEM DOES: 1st—Favors the battery by putting in a tapered charge. 2nd—Cooled by forced draught (latest European practice). This enables us to get efficiency from a small machine, and it does not heat up. 3rd—Favors the lamps and can do what no other does, run one 2 c. p. lamp or all five lamps *without the battery connected.*

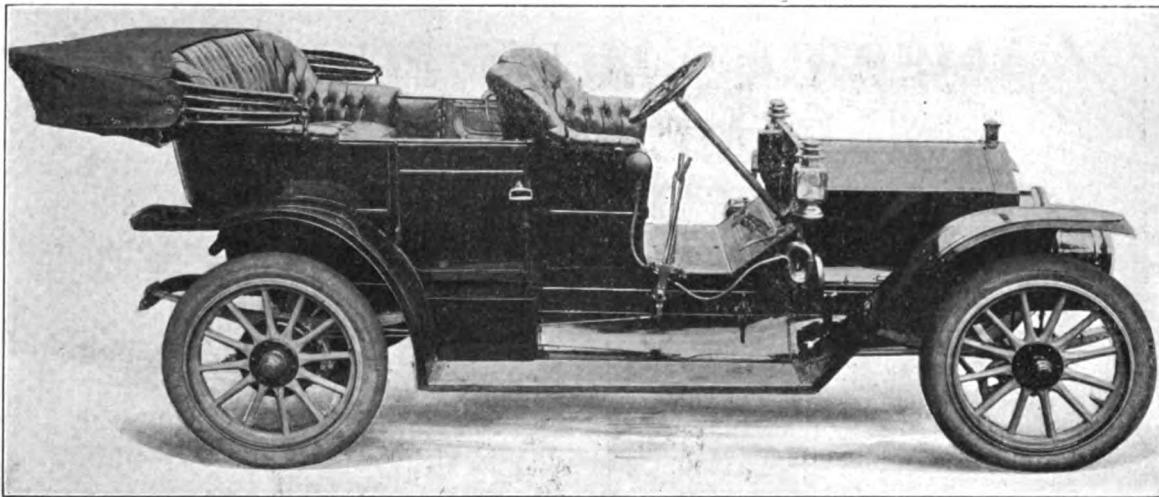
Order our system for your new car. Don't compromise (as they did in houses when electricity first came in) and have gas and electric, but order our complete electric lamps for head, side, and tail and be up-to-date. Can be seen in operation at New York, Chicago, and Boston Shows.

Full Particulars on Request

GRAY & DAVIS, Amesbury, Mass.

Manufacturers of HIGH-GRADE AUTOMOBILE LAMPS

Pullman 1911



Unexcelled Intrinsic Values Unexcelled Wearing Qualities

NINE MODELS, \$1650 TO \$4000; 30 TO 50 HORSEPOWER

PULLMAN POPULARITY is due to the fact that the car is built on the principle that use is the best test. We can show you cars that have gone 90,000 miles and are still going. Their performances prove their perfection. The aim of the Pullman Company since its inception has been not to introduce radical and revolutionizing ideas but to build the best automobile possible. It has striven to not only keep abreast of the times but to so equip and manage its entire organization that Pullman automobiles could be manufactured and sold more advantageously than any other car.

Our complete line will be on exhibition at the Madison Square Garden and Coliseum Shows. Many Pullman agents will be there whom you should know. They who sell our cars are best qualified to speak of the agency proposition.

We want RESPONSIBLE, ESTABLISHED, PROGRESSIVE DEALERS to represent us in UN-ALLOTTED TERRITORY, particularly in the following cities—Pittsburg, Pa.; Cincinnati, O.; Louisville, Ky.; Memphis, Tenn.; Indianapolis, Ind.; Detroit, Mich.; Des Moines, Iowa; Omaha, Neb.; Denver, Colo.; Milwaukee, Wis.; and in many points throughout Texas and the Southwest.

PULLMAN MOTOR CAR COMPANY, Drawer W, York, Pa.

Licensed under Selden patent.

Those car manufacturers, who place the satisfaction and convenience of their customers above every other consideration, including price, use as

Regular or Partial Equipment

Continental

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Detachable Demountable Rims

Hudson

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Lancia

American

AMERICA'S MOST POPULAR DEMOUNTABLE

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UNIVERSAL DEMOUNTABLE RIM

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Cadillac

Peerless

Chadwick

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Columbia

Renault

Diamond

Simplex

Dorris

Stearns

Fiat

Exhibited at Their Respective Booths

Stevens-Duryea

Grout

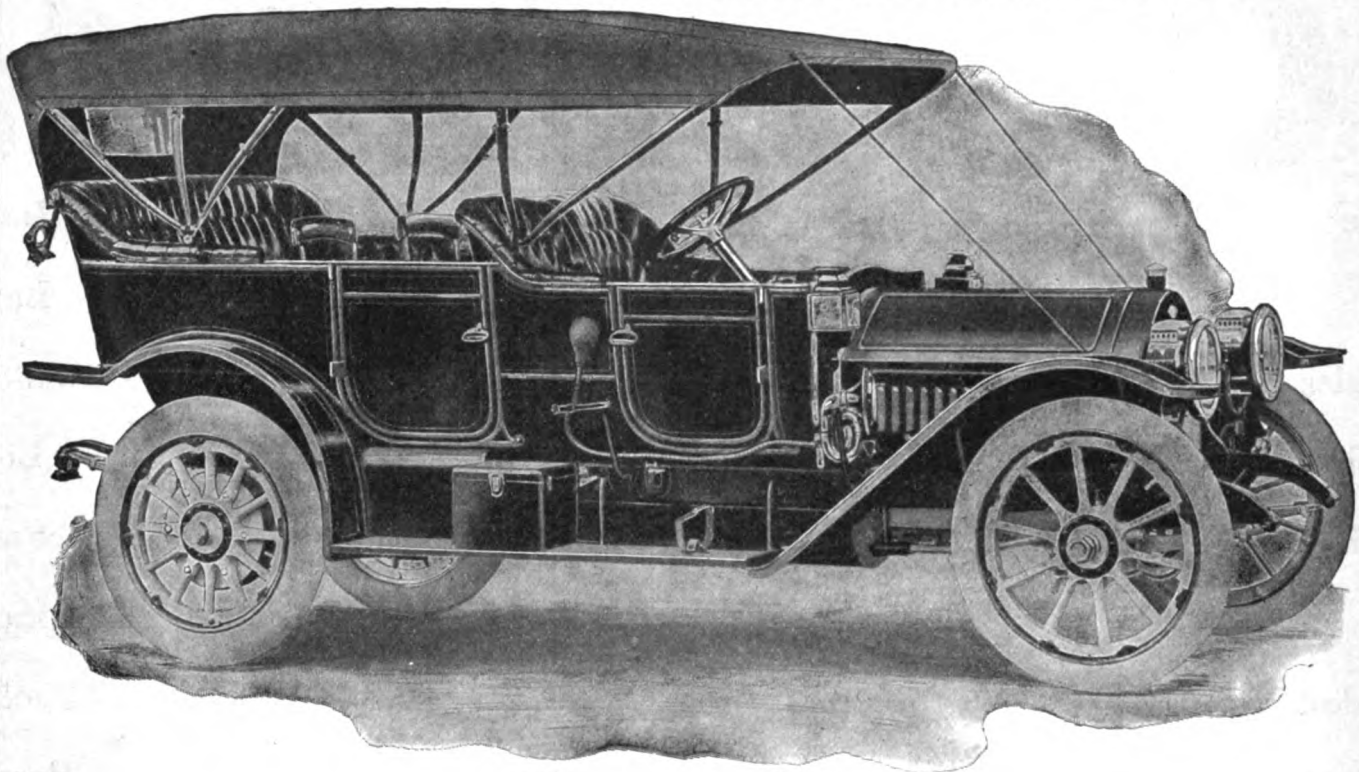
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Auto Shows — Madison Square Garden

No Fine Car in America Save This Can Offer You
the Supreme Efficiency of a
PERFECT VALVELESS MOTOR



**30-50 Fore-door
Touring Car**

Amplex

\$4,300

Anyone of half a dozen fine cars will afford you all your heart desires in luxury and refinement and smartness.

So will the Amplex—but, in addition to these externals it brings to you a degree of motor efficiency higher than you have ever discovered in any four-cycle car.

And in comparison with the tremendous advantages made possible only by the Amplex valveless two-cycle motor, the importance of other considerations fades away like fog before the sun.

Imagine a car that is absolutely free from trouble, so far as valves are concerned—because it has no valves.

An engine that never falls off in power or fails at some critical moment when the need for power is greatest—because it has no valves.

A motor that pulls with the steady, ceaseless turning power of an electric motor—because it has no valves.

Imagine your ease of mind if you had no valves to watch over and care for constantly—to grind and adjust and repair—in order to insure full efficiency from your engine.

Imagine, too, an engine from which is absent the “slap” of valves—an engine so nearly noiseless that you have to listen to hear it when it runs idle.

Think of these advantages—and you will admit that they are overwhelming, won't you?

Add to them the comfort and satisfaction that ownership of a truly fine car affords, and you will begin to have a fairly adequate idea of the Amplex.

In the entire field of America's highest grade cars, the Amplex is the only one that has the advantage in the one great essential—the valveless motor.

As opposed to the four-cycle, the Amplex engine is elementally simple and stands as the representative of the most perfect development of modern motor construction.

The difference—and the simplicity—stamp the Amplex as a better car, and as one which has a higher claim on your consideration than any other of equal or approximate price.

If you intend visiting the New York Show at Madison Square Garden, spend at least enough time at the Amplex exhibit to understand and appreciate this remarkable car.

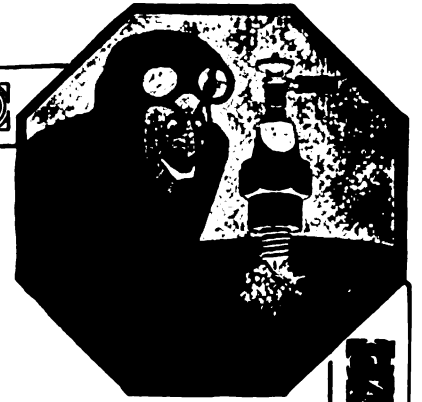
Or the new literature will be mailed upon your request.

Simplex Motor Car Company, Dept. D, Mishawaka, Ind.

LICENSED UNDER SELDEN PATENT

MADISON SQUARE GARDEN SHOW, NEW YORK, JANUARY 7—14.

The Victors Used Bosch Plugs



One of the remarkable incidents of the year was the instant success achieved by the new Bosch Plug.

Introduced to manufacturers and racing drivers in midsummer, the Plugs soon became the standard equipment of the high grade stock and special cars entered in the more important tours, road and speedway races and contests, and they won many events.

These Trophies and Races were won by cars Using Bosch Plugs:

The Speedway Helmet
Remy Grand Brassard and Trophy
100-Mile Free-For-All (I. M. S.)
50-Mile Free-For-All (I. M. S.)
The 200-Mile Free-For-All (I. M. S.)
G. & J. Trophy
Wheeler & Schebler Trophy
Cobe Trophy

Illinois Trophy
Algonquin Hill Climb
Fairmount Park Race (Three Classes)
Coco Cola Trophy
Atlanta City Trophy
Tiedeman Trophy
Savannah Trophy

THE GRAND PRIZE

Successful and victorious drivers do not use a Plug in an important Race unless they are sure of its dependability and quality.

When a constantly increasing number of victorious cars equip with any Plug, you can be sure that there is quality and ignition efficiency in that Plug.

SPECIFY BOSCH PLUGS

**BOSCH
PLUGS**

\$1^{.00}
Each

\$10.80
The
Dozen

Ask for our Plug Literature by Mail or at the Shows

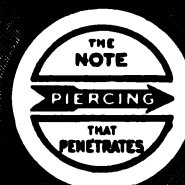
BOSCH MAGNETO COMPANY, 223-225 West 46th Street, New York

CHICAGO—DETROIT—SAN FRANCISCO





SIRENO



Announcement for 1911

The Sireno Company announces for the season of 1911 three general types of SIRENO horns, namely, Automobile and Marine types, and the Motorcycle type, or CYCLEPHONE.

AUTOMOBILE TYPE

The SIRENO, Automobile type, is a siren driven by a finely built electric motor, from the 6 or 8 volt ignition storage battery.

It is essentially a long range signal, with a unique rising and falling pitch, which warns instantly, but without offense.

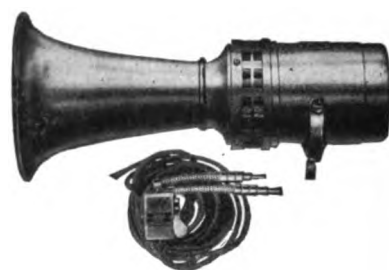
It is made in five styles and sizes, as follows:

The "SIRENO" with long or short Projector.....\$35.00

The SIRENO JUNIOR with long or short Projector 25.00

The SIRENO MIDGET with short Projector only.. 18.00

Prices include Regular Switch, set of Cables, and the necessary bolts and nuts for installing.



SIRENO with Long Projector

MARINE TYPE

The SIRENO Marine types differ from the Automobile types only in point of finish, style of switch and method of attachment, the Marine types having a swivel deck base with set screw attachment permitting the horn to be quickly removed. They are furnished in either hard baked BLACK ENAMEL or extra heavy NICKEL PLATE.

Prices—"SIRENO," \$37.50; SIRENO JUNIOR, \$27;
SIRENO MIDGET, \$19.50.



MARINE TYPE with Long Projector

THE CYCLEPHONE

The CYCLEPHONE has the regular SIRENO turbine, but instead of using an electric motor, power is transmitted from the front tire through a friction pulley. A touch of the lever brings the pulley against the front tire, and a spring retracts it when not in use.

The CYCLEPHONE may be attached to nearly all standard makes of motorcycles. In one or two instances an adapter is necessary, therefore SPECIFY MAKE OF MOTORCYCLE WHEN ORDERING.



CYCLEPHONE
\$12.00

TO THE TRADE

A catalog is incomplete without a description of SIRENO signals. Write for a copy of the "SIRENO Cut Book," showing electrotypes of various styles and sizes.

THE **SIRENO** CO.

714 TAYLOR BLDG.
NEW YORK



See the “SOLAR” Booth at the Shows

For the Newest Ideas in the Best Motor Lamps

See the “Solarcclipse” with two distinct fields of light and the new and improved Gold Reflector, which sends out golden rays like sunlight.

See the new Electric Headlights, also equipped with this Gold Reflector.

See the Solar combination oil and electric Side and Tail Lamps, the combination gas and electric Headlights, and the combination gas and oil Truck Lamps.

Don't miss any of them, for all are worth seeing.

Notice the class of the cars at the Show that are equipped with Solar Lamps.

Observe the neat lines of these lamps and their quality.

If you buy a car, no matter what kind, make the bargain “*With Solar Lamps.*”

Our New York booth will be No. 126.

The booth at Chicago will be No. 41.

BADGER BRASS MFG. CO.

Kenosha, Wis.

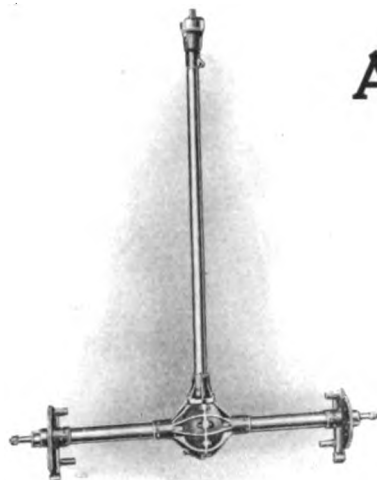
New York City

(115)

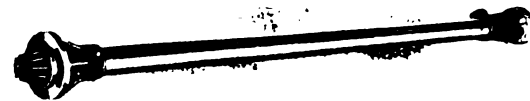
Sales Representatives
American Distributing Co., Jackson, Mich.

American Gear and Manufacturing Company Rear Axles for Light Cars

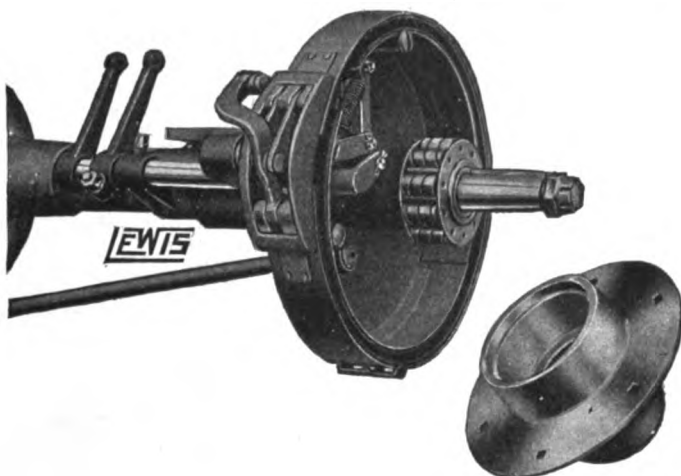
Durability is one of the strongest features of American rear axles for light cars. The better known and more popular cars of this type are fitted with our axles. Gears are properly hardened and accurately ground. Bearing equipment according to purchaser's specifications.



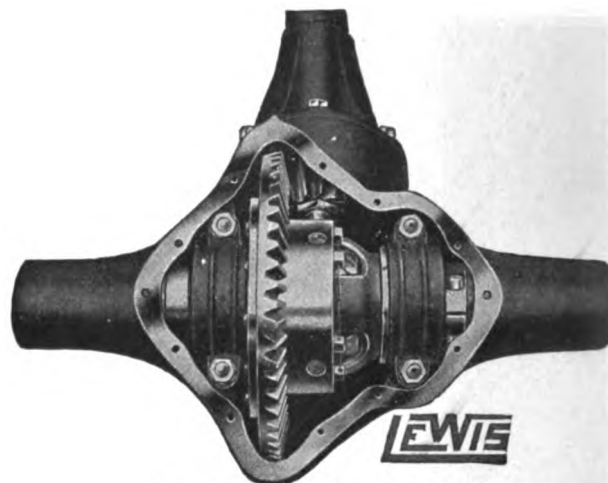
Rear Axle Assembled.



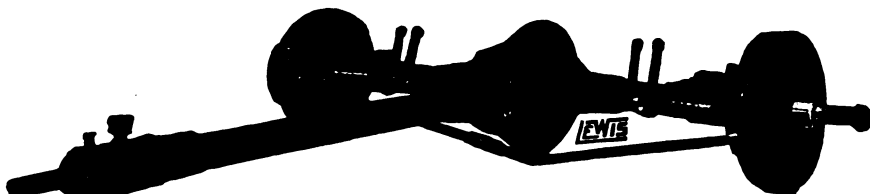
Propeller Shaft in Housing and Rear Axle Driving Shaft.



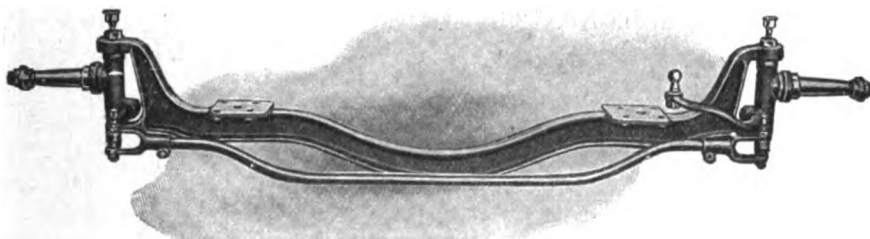
Brake Assembly of No. 8 Rear Axle.



Gear Assembly of No. 8 Rear Axle.



No. 8 Rear Axle—One of several models, each mechanically perfect beyond comparison for quality.



No. 4 Front Axle—12 models covering all requirements.

Lewis springs, axles, forgings, controls and transmissions are unexcelled for quality.

LEWIS
QUALITY

The type of rear axle shown is a distinct advance in rear axle construction. It removes the vehicle load from the driving shafts, eliminating the possibility of shaft breaking. High duty Hyatt Roller Bearings used in the wheels. The brakes are equally efficient in both directions of wheel rotation. The bands release instantly and in released position stand entirely free from the drums.

AMERICAN DISTRIBUTING COMPANY

1030 S. Park Street, Jackson, Michigan

SALES REPRESENTATIVES FOR

Lewis Spring & Axle Co., Jackson, Mich.

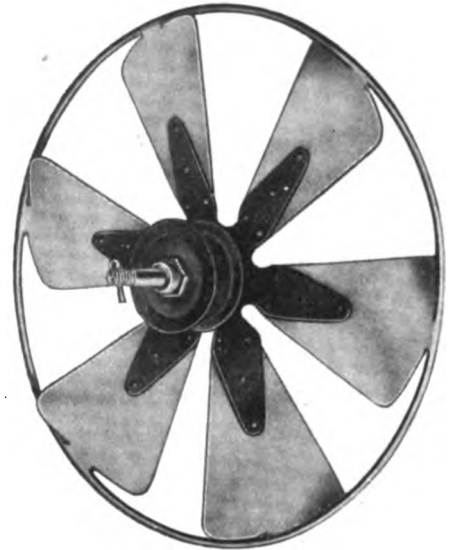
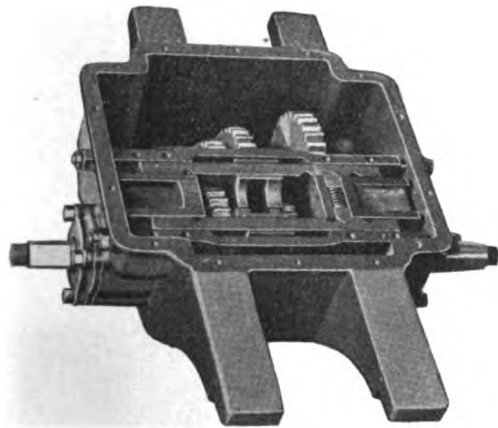
American Gear & Mfg. Co., Jackson, Mich.

Sales Representatives**American Distributing Company, Jackson, Michigan****Sparks-Withington Pressed Metal Parts**

Pressed steel and aluminum radiator fans, hub caps, ball cups, brake drums, etc., are Sparks-Withington specialties. Made on stock or individual designs and specifications. Materials employed are the highest grade; so good and sound that Sparks-Withington products are specified year after year by the leading car manufacturers.

Frost Gears

The Frost new plain bearing Sliding Gear Selective Type Transmission, three speeds ahead and reverse, is illustrated. The square shifter bars, running in accurately milled slots in a carrier case, is worthy of particular attention. This construction has distinct advantages in that it prevents the shifter from rubbing and rattling on the hubs of revolving gears, and also gives a larger and better bearing for the finder and locking pins, insuring better wearing qualities.



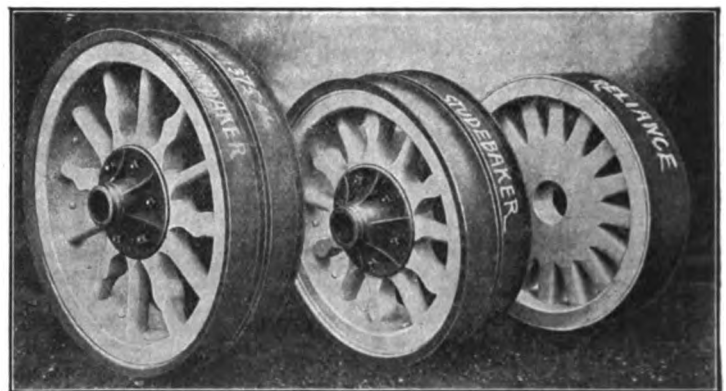
There are only two openings in the case (for main shaft) where there is any chance for leakage of oil. If necessary to get at the gears, shifter case, cover, rods, and shifter forks can be taken out as a unit.

The shifter slide cover (not shown) contains the quadrant, so that a quadrant on the side of the car is unnecessary. All gears are carbonized, heat treated and ground true with the pitch line.

Prompt deliveries, a limited quantity of planetary transmissions, in stock, ready for immediate delivery.

Hayes Wheels

The illustration shows several of the types of truck wheels produced at the Hayes plant, in addition to the types of pleasure car wheels. The reputation of Hayes Wheels has been built, and the high opinion of automobile builders won and held, by a quality recognized as the best and highest.

**AMERICAN DISTRIBUTING COMPANY**

1030 S. Park Street, Jackson, Michigan

Hayes Wheel Co., Jackson, Mich.

SALES REPRESENTATIVES FOR
The Sparks-Withington Co., Jackson, Mich.

Frost Gear & Machine Co., Jackson, Mich.

The Standard Automatic BRUSH

does your painting work in a new way, better, quicker, cheaper, eliminating all waste of paint.

An equal flow at all times; thickness of coat can be accurately adjusted. Absolutely clean and fireproof.

The Standard Automatic System

does away with the paint can. It eliminates the dip and is far superior to the spray, but it does rub it in. No air pressure is needed. Will work with any

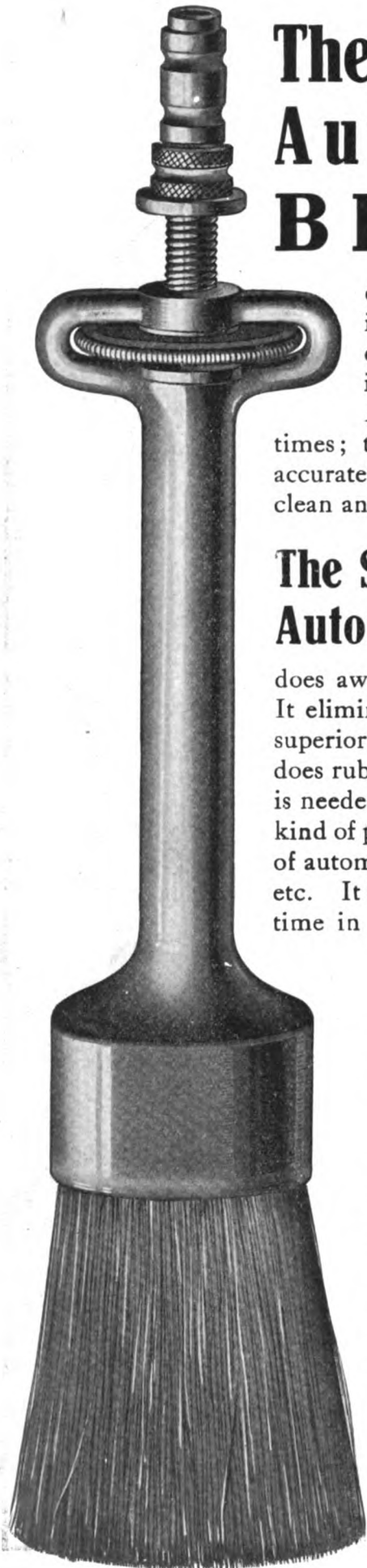
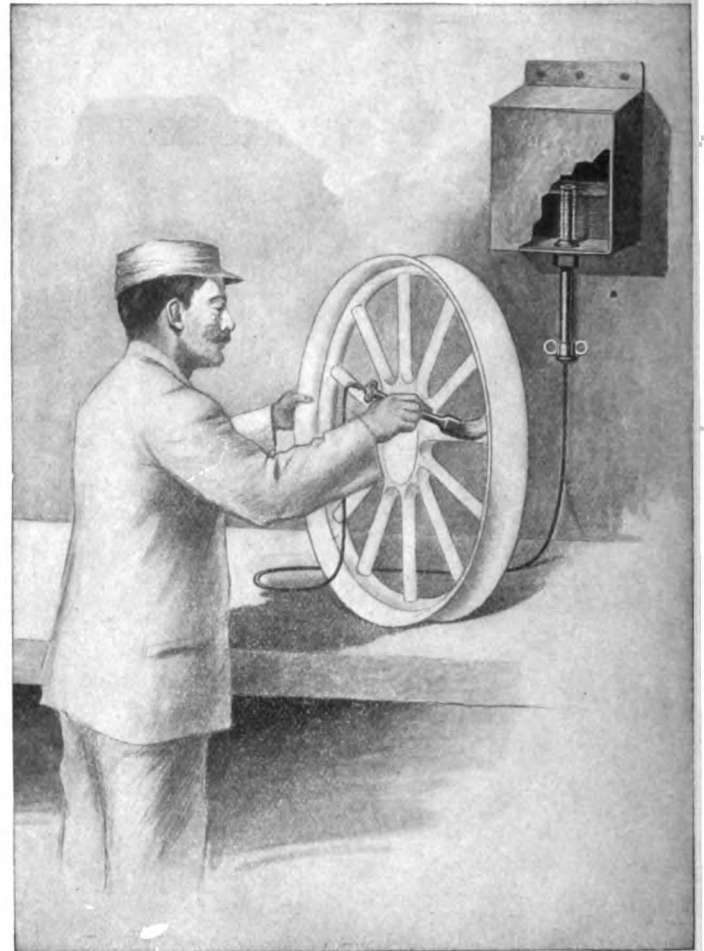
kind of paint. Get next to this new method. Made especially for manufacturers of automobiles, automobile bodies and wheels, all kinds of vehicles, carriages, etc. It is most useful for manufacturers of furniture. It will also save a lot of time in painting structural work, such as bridges, elevated roads, etc. House and sign painting can be done effectively and quick.

Wherever duplication of work exists, this device will increase your output and reduce the cost. Buy just one outfit to-day and be convinced. We are sure that we will have to equip your entire plant. Special equipments can be made to suit your purpose.

Complete outfit consisting of a large paint tank, either stationary or movable, with automatic valve and six feet of flexible tubing, together with the automatic adjustable brush made of aluminum, costs \$7.50, and it is still cheaper than the ordinary brush. The outfit is also made with a tank to be strapped on the back which will cost \$2.50 extra. Our booklet will tell you why. Write for one today. Send in your order. Your outlay will only be once. Apparatus will last a lifetime. Let us know to-day what you are manufacturing and we will effect a saving for you.

Jobbers and Dealers Wanted Everywhere

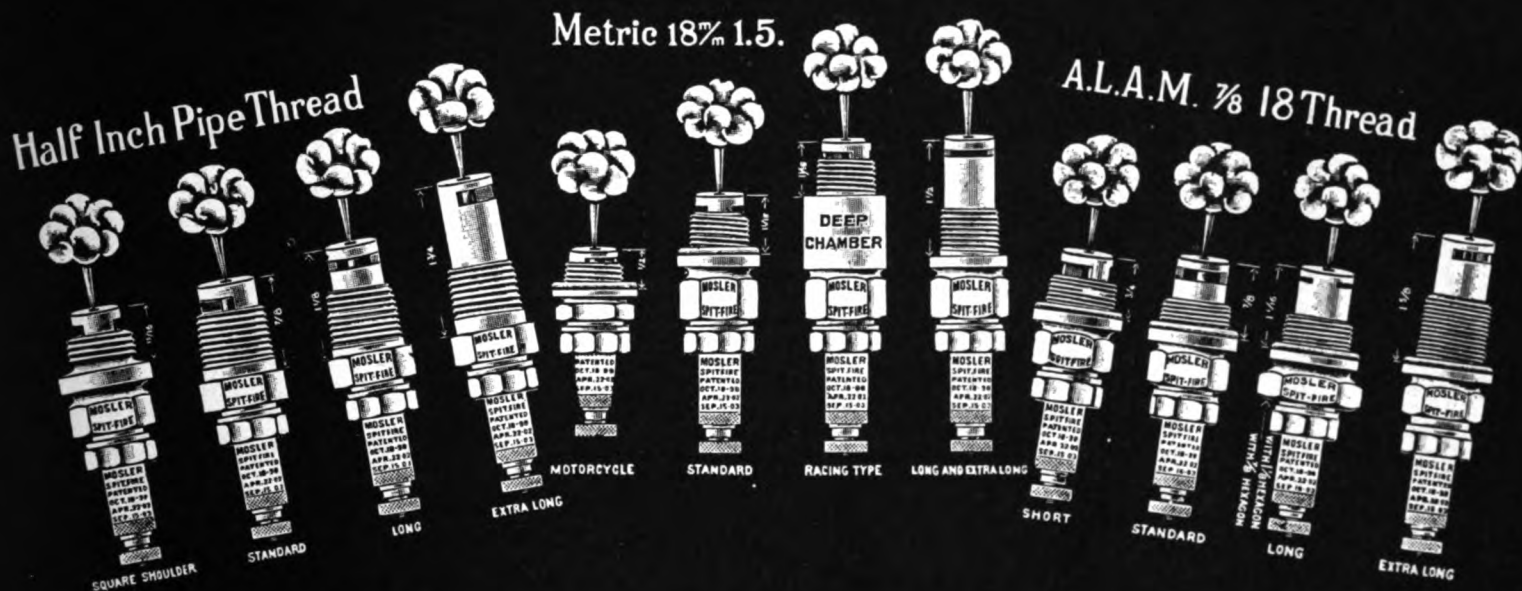
STANDARD AUTOMATIC MANUFACTURING COMPANY
50 Church Street
NEW YORK



Mosler Spit Fire

THE PLUG
WITH THE DEEPEST CHAMBER

Leads the World



MAGNETO & MICA TYPES

VESUVIUS & STANDARD TYPES

SHOOTS A FLAME HOT AS THE FIRES OF VESUVIUS
IGNITES THE CHARGE ENERGETICALLY AND UNFAILINGLY
Energetic Ignition Greater Power

Dealers and jobbers beware! We protect our trade mark
PACKED IN THIS BOX FOR YOUR PROTECTION



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Will you let us send you this valuable Book FREE

Forty-eight pages, compiled from the most instructive and practical articles written on the subject, boiled down to meaty facts, presented in clear, concise, unmistakable language, so that every automobilist owning this book can know his own ignition system and how to conquer ignition difficulties. Filled to the brim with practical hints. You need this book—send for it now.

Go Over This Partial List of Subjects Treated:

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How to Adjust Vibrating Coils.
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Wiring, Timers.
Practical Electrical Units and Standards.
How to Locate Ignition Troubles.
Action and Purpose of "Condensers;" How to Make Adjustments.

Fill
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and

Magneto Type
at \$1.25

Regular Type
at \$1.00

Sold by leading jobbers, dealers in automobile accessories everywhere. If your dealer can't supply you, order direct from factory; shipped to you prepaid at the prices quoted.

Mail
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Coupon

JEFFERY-DEWITT CO.,
65 Butler Ave., Detroit.

Send me "Ignition and Spark Plug Talk."

Name

Address

Reliance

(REG. U.S. PAT. OFF.)

SPARK PLUGS

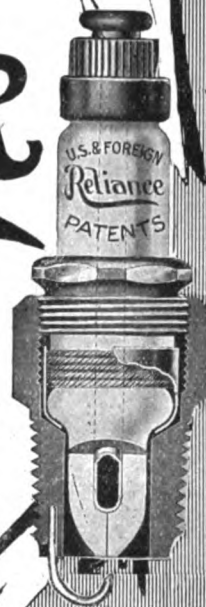
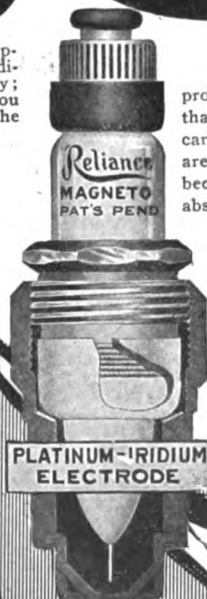
produce a more intense spark and use less battery power than any other plug. Are absolutely soot proof, and carbon proof, and do not require cleaning because they are proof against any and every combination we have been able to find in a gasoline engine cylinder. Are absolutely infallible when short circuit matter is encountered.

RELiance MAGNETO SPARK PLUGS cannot foul even when an excess amount of oil is used. Equip your engine with Reliance plugs and you'll do away with spark plug troubles.

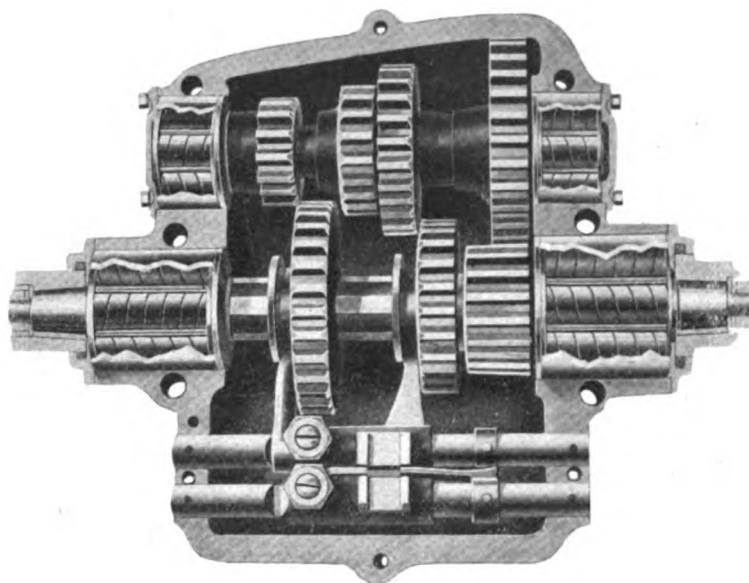
JEFFERY-DEWITT CO.

Makers of
Reliable Spark Plugs
65 Butler Ave., Detroit, Mich.

ARMAND FREY & CO.,
Berlin, Germany,
Agents for
Continental
Europe.



Hyatt Roller Bearings



THE Standard Type of the Hyatt Roller Bearing is designed with generous bearing length. This permits the rollers to operate directly on a soft or untreated steel shaft.

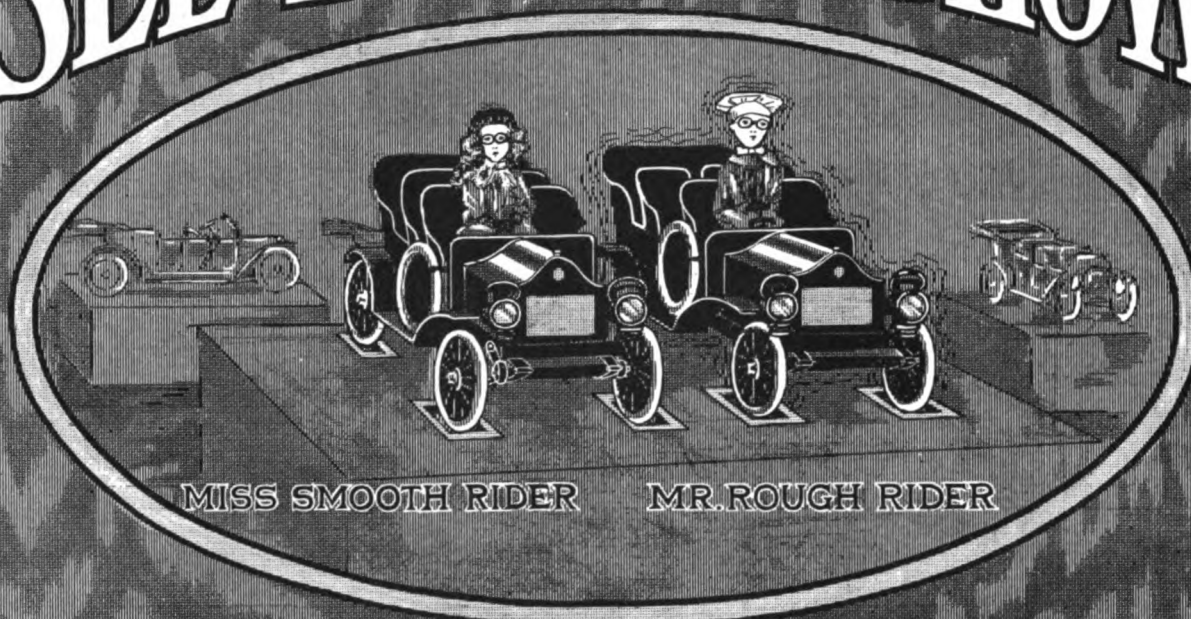
Flexibility of the Hyatt Roller affords full line contact. Equal distribution of the load along the entire length of the bearing is insured. Overloading any particular point, thereby causing excessive wear, is avoided.

Lubrication is positive. The rollers form oil reservoirs. The right and left spirals distribute the oil to every part. These are exclusive features of the Hyatt Roller Bearing.

Hyatt Roller Bearing Co.

Detroit, Michigan

SEE 'EM AT THE SHOW



MISS SMOOTH RIDER

MR. ROUGH RIDER

A PRACTICAL DEMONSTRATION

of the value
of the

Truffault-Hartford

SHOCK ABSORBER

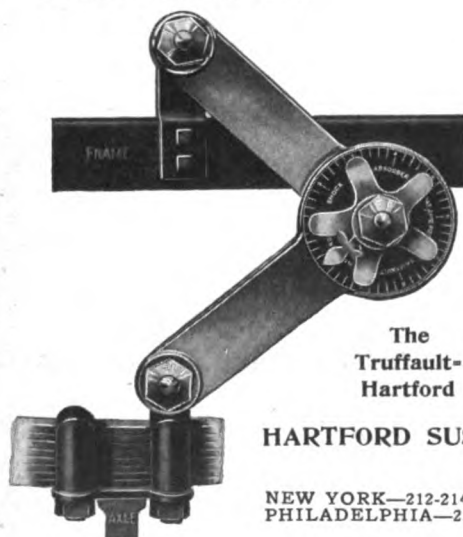
"MAKES ALL ROADS SMOOTH ROADS"

AT ALL THE PROMINENT SHOWS

NEW YORK—Madison Square Garden
January 7-14, January 16-21

CHICAGO—Coliseum
January 28-February 11

BOSTON—Mechanics Building
March 4-11



The
Truffault-
Hartford

See Miss Smooth Rider in her Truffault-Hartford-equipped car. Note how smoothly, evenly she rides, though the road is very rough. Then take a look at Mr. Rough Rider in his car, which is *not* Truffault-Hartford-equipped. The difference is so marked that it will set every car owner thinking.

Further, look at the cars exhibited. You'll find a large percentage of the leading makes have the Truffault-Hartford as *regular equipment*.

And always bear in mind that *we can fit any make of car and make any car fit for any road.*

HARTFORD SUSPENSION COMPANY, 181 Bay St., Jersey City, N. J.

EDW. V. HARTFORD, Pres.

BRANCHES:

NEW YORK—212-214 W. 88th St.
PHILADELPHIA—250 N. Broad St.

NEWARK—289 Halsey St.

BOSTON—319 Columbus Ave.
CHICAGO—1458 Michigan Ave.

How Motorists Lose Millions by Not Knowing Tires

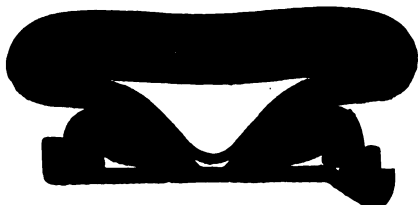
Goodyear tire sales just trebled last year—jumped to 8 1-2 million dollars. Yet these patented tires, for most of the year, cost 20 per cent. more than other good tires. All because Goodyear No-Rim-Cut tires get rid of rim-cutting entirely. And because Goodyear tires are 10 per cent. oversize. These two

features together double the worth of a tire.

Now these premier tires—because of enormous production—cost the same as other standard tires. And 64 leading motor car makers have contracted for them for 1911. Motor car owners can save millions of dollars by learning about these tires.

No Rim-Cutting

Goodyear No-Rim-Cut tires absolutely eliminate all danger of rim-cutting. And that ruins more tires than any other one cause. Let us explain how one Goodyear invention gets rid of this trouble entirely.



The picture shows an ordinary tire—a clincher quick-detachable—fitted in a standard universal rim. This is the rim adopted by all the big rim makers. The same principle is used in demountable rims.

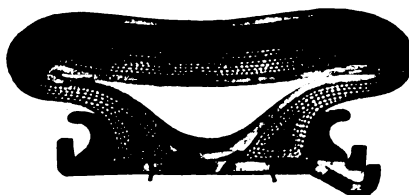
All clincher tires have these hooks on the base. The rim flanges, with such tires, must be turned to hook inward—to grasp hold of this hook in the tire. That's how the tires are held on.

Note how the thin hook of the rim then digs into the tire. That is what causes rim-cutting. When the tire is deflated, as shown in the picture, it comes right against that thin edge. That's why driving one block on a flat tire may wreck it beyond repair.

The Goodyear Way

The next is a Goodyear No-Rim-Cut tire fitted in the same universal rim. The movable rim flanges are simply reversed to curve outward when you use this tire. For the Goodyear No-Rim-Cut tire has

no hooks on the base—nothing to fit into these rim flanges.



The 63 Braided Wires

When the tire is deflated, as shown in the picture, it comes against the rounded edge. Rim-cutting is simply impossible.

We have sold half a million No-Rim-Cut tires. We have run them deflated in a hundred tests—as far as 20 miles—with never one instance of rim-cutting.

How We Control It

Unless a tire is to be hooked to the rim the base must be made unstretchable. And we control the only practical way to make an unstretchable base.

We do it by running 63 braided piano wires through the base on each side. Nothing whatever can stretch the tire over the rim.

When the tire is inflated those braided wires contract. The tire is then held to

the rim by a pressure of 134 pounds to the inch. It can't creep on the rim, and no tire bolts are needed to hold it on.

Other makers—to meet the competition—run a single wire through the base, or use a hard rubber base. But neither device will do. The braided wires alone contract under inflation, and that is essential in a safe hookless tire.

Goodyear Tires 10% Oversize

Another fact is that Goodyear tires average 10 per cent oversize. That means 10 per cent more tire to carry the load. It means, on the average, 25 per cent additional mileage with no extra cost.

This oversize is vital, for motor car makers—in these days of close figuring—rarely provide a tire large enough for any extra load. When you add extras to your car—such as top, glass front, gas tank, gas lamps, etc.—you overload the tires. The result is a blow-out, and it often occurs while the tire is new.

Goodyear tires take care of these extras, because of their oversize. That fact alone, on the average car, will save 25 per cent on tire bills.

These tires which can't rim-cut cost this year just the same as tires that do. These oversize tires cost the same as skimpy tires. You can avoid all this trouble—save all this expense—by simply insisting on Goodyear No-Rim-Cut tires.

Please ask for our book, "How to Select an Automobile Tire." It explains a dozen other reasons why Goodyear tires are best.

GOODYEAR
No-Rim-Cut Tires

The Goodyear Tire & Rubber Company, Arthur St., Akron, Ohio

We Make All Sorts of Rubber Tires

Branches and Agencies in all the Principal Cities


Canadian Factory: Bowmanville, Ontario

Main Canadian Office: Toronto, Ontario

**See Our Exhibit at the Shows—New York, 122 Elevated Platform, Madison Square Garden;
Chicago, 51-52 Coliseum Gallery; Boston, F-543-544.**

BECKER **BECKER**

Becker Steels Made by Experts




QUALITY

ELECTRIC MELTED

CHROME-NICKEL STEEL
CHROME-VANADIUM STEEL
SILICO-MANGANESE STEEL
3½% or 5% NICKEL STEEL

FORGINGS



UNIFORMITY

DROP-FORGED BLANKS for Transmission Gears, Pinion and Bevel Gears—Oil Treated and Annealed for free machining.

DROP-FORGED Axles—Shafts—Steering Arms and Spindles—Oil Treated and Annealed to show certain physical properties—can be machined and used without further treatment or hardening.

We furnish all kinds of **FORGINGS** made of **BECKER Electric Melted Alloy Steels—Forged by Experts—Oil Treated and Annealed by Experts.**

BECKER STEEL COMPANY OF AMERICA

SALES AGENTS IN UNITED STATES FOR
Stahlwerk Becker A. G., Willich, Germany

90 WEST ST.,
NEW YORK, N. Y.

Money In Your Pocket

to look up space

605

(BASEMENT)

AT MADISON SQUARE GARDEN AUTO. SHOW

Tear this out for future reference



"EVERYTHING DROP-FORGED"

That means that our Auto Tools are the strongest and most durable that can be made. They last a life-time. The steel selected is of the highest grade. In design our tools are thoroughly up to date.

They fit the hand
They are handy to manipulate
They are readily adaptable
They are never failing in use

THE B. & S. AUTO WRENCH

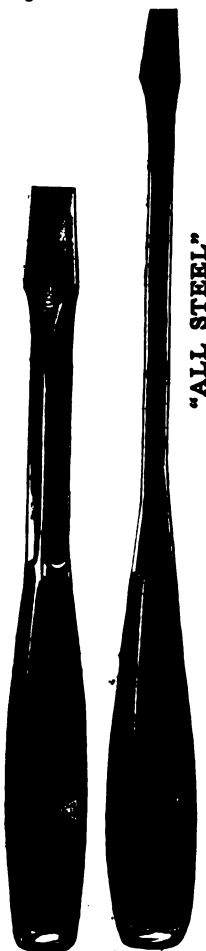
is a tool as necessary to your car as the engine itself. Don't fail to get our catalog of Auto Forgings and Tools.



**The Billings &
Spencer Co.**

Hartford, Conn.

London:
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Aldersgate St.



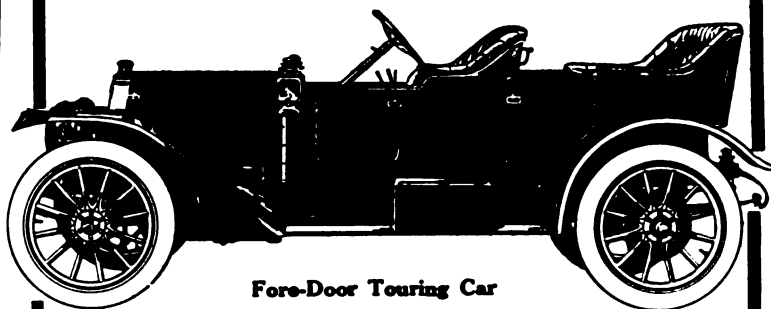
"ALL STEEL"

National 40

Monarch of the Road King of the Speedway

You may not care to use continually the 70-mile-an-hour speed of the great untiring National 40 motor (5-in. bore by 5 11-16-in. stroke). But it is comforting to know that you have plenty of reserve power for any and every emergency. The knowledge that no fiber of the mechanism has faltered in the gruelling test of leading race classics on road, speedway and hill gives a satisfying assurance of dependability.

Silent, invincible strength and luxurious riding qualities of the majestic National 40 will delight the most conservative. And the sportsman who likes to accept the challenge of the open road will revel in the great power and speed of the National 40—identical with the National of racing fame.



Fore-Door Touring Car

The prestige of the repeated racing triumphs is a valuable asset to every National dealer.

The 1911 output is limited. Our present distributors want every car we can build and more. *We desire wider distribution, however, and have an attractive proposition for a few more good dealers in unallotted territory. Better wire.*

Prices { TOURING CAR
TOY TONNEAU
SPEEDWAY ROADSTER } **\$2,500**
Fore-Door Touring and Toy Tonneau, \$2,600

NATIONAL MOTOR VEHICLE CO.

1007 E. 22d Street

INDIANAPOLIS, IND

Licensed under Selden patent.

EFFICIENT BRAKES

MOST IMPORTANT OF ALL EQUIPMENT

DUPLEX EXTERNAL BRAKES

Here's the ONE brake for you to use. It has no equal.

Simple in design. Excellent construction. The best possible material.

Built by brake experts. Men who have been building brakes ever since the inception of the automobile.

DUPLEX acts instantly. Either forward or backward. Never fails. Gives safety, security, satisfaction.

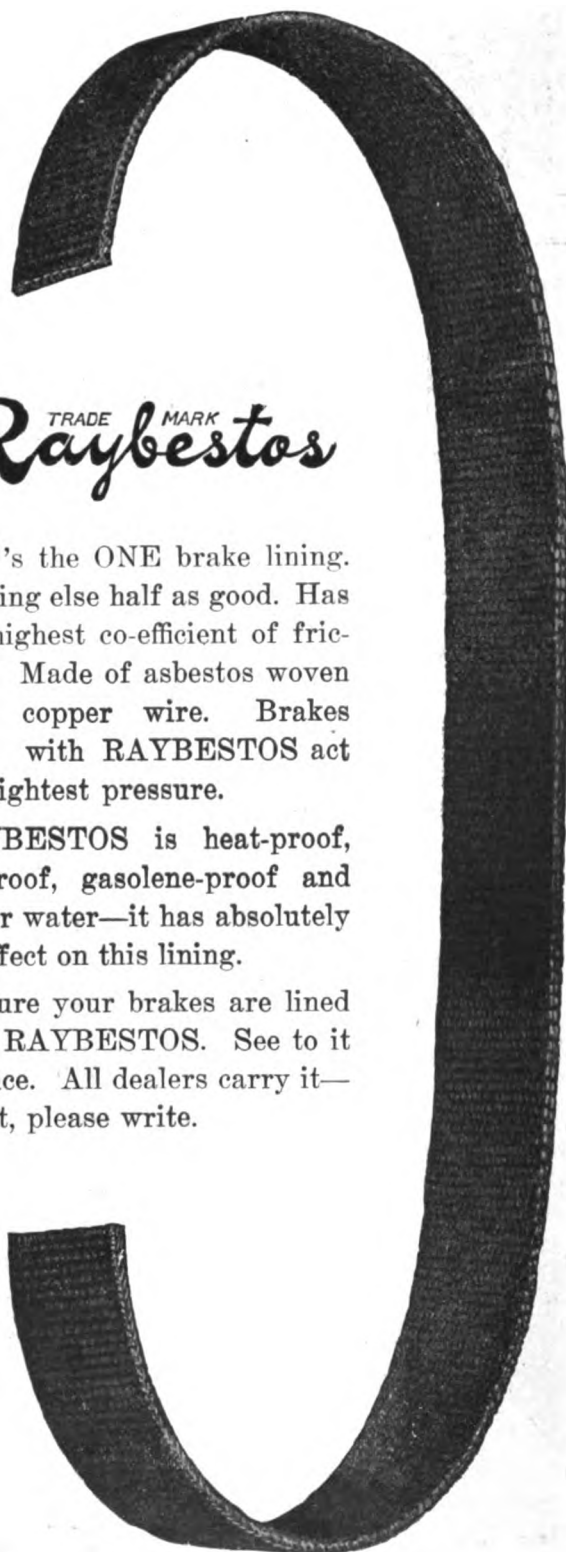


TRADE MARK
Raybestos

Here's the ONE brake lining. Nothing else half as good. Has the highest co-efficient of friction. Made of asbestos woven with copper wire. Brakes lined with RAYBESTOS act on slightest pressure.

RAYBESTOS is heat-proof, oil-proof, gasoline-proof and as for water—it has absolutely no effect on this lining.

Be sure your brakes are lined with RAYBESTOS. See to it at once. All dealers carry it—if not, please write.



Be sure to see our exhibit at the Garden Show—Brakes and Brake Lining—we will be pleased to quote prices and give full information.

THE ROYAL EQUIPMENT COMPANY, 436 Housatonic Avenue, Bridgeport, Conn.

This 'Ad' is Directed to Automobile Engineers Only

AUTOMOBILE SCREW MACHINE PRODUCTS

WE ADDRESS THE ENGINEER because he it is who must specify the quality of the materials to be used in the car he is designing—he alone knows the difference between quality and mediocrity in machined parts.

EXPERIENCED ENGINEERS KNOW there's nothing cheap about roughly done work—carelessly finished parts. Every part must register exactly, else the losses in assembling will be beyond computation. Perhaps you have had experience with that kind—made on old, half-worn machines by concerns that haven't yet caught up with the times.

OUR SPECIALTY IS QUANTITY orders where quality is the first requisite. We do not pretend to compete on ordinary, slipshod work—we are especially equipped for the highest grade of work and in that we acknowledge no peer.

OUR SCREW MACHINE DEPARTMENT is equipped with the latest type of four-spindle automatics, invented and designed by our Mr. John J. Grant—known the world over as the father of automatics and ball-making machines. We therefore have a great advantage over those concerns—and they are the next best—which use Grant machines of earlier models. We have the latest products of Grant's inventive mind—and we have Grant himself. Being a Manufacturing Engineer, you know what that means.

OUR CAPACITY IS LARGER than that of any other save possibly one. We have a Million Dollar Equipment—up-to-the-minute in every detail.

PRECISION WORK — TO ANY DEGREE OF ACCURACY is the kind we solicit. The better you know what you want the more surely can we satisfy you.

SEND US YOUR DRAWINGS and specifications. Tell us how many of each part—we'll get together. We'll accept small orders, but of course we can do better on quantities.

DELIVERIES—THAT'S IMPORTANT. We do not accept business beyond our capacity—if we take the order we will not disappoint you on deliveries.

HIGH GRADE, HIGH DUTY STEEL BALLS

ARE YOU IMPORTING STEEL BALLS from France or Germany or elsewhere? Some concerns still are, you know.

PARDON US FOR SPEAKING BLUNTLY, but there's only one way to express it—and we want to put you right for our mutual benefit—the only excuse for importing steel balls today is ignorance of the fact that we make not as good, but better balls in America now than any European concern can furnish.

BETTER STEEL, BETTER TREATMENT, more accurately ground—consequently stronger and more durable.

WE FULLY APPRECIATE the significance of that last paragraph and we know you will doubt it unless you are up to the minute informed on this matter. So we stand ready to prove it to you by any test you can suggest.

DO YOU KNOW that the French and German and English balls you have been importing and paying so heavily for are made—every one of them—either on machines invented by our Mr. John J. Grant, or crude imitations of Grant machines. Didn't know that? Well, look up the history of the ball business, then remember that Grant's latest ball-grinding machines are ten years in advance of his former ones.

NOW, WHAT WAS THE REASON American makers did not make better balls formerly? Simply lack of demand. The automobile business has changed that. Today there is a demand for round balls made to one ten thousandth of an inch accuracy. We make that kind—absolutely round balls—absolutely accurate as to size.

THE PROGRESS IN STEEL MAKING and heat treatment in America has been simply wonderful in the last three or four years—thanks to the automobile which demanded the best. We now have our steels made to our own analyses. We have facilities for heat treating that eliminates all tendency to distort and which produce high-duty balls of absolutely uniform quality.

YOU WILL IMPORT NO MORE BALLS after you have compared ours with the best you can buy, at any price, abroad, and, since the duty is very high on balls, and our methods the most scientific and economical, you will save money by buying the best hereafter—Grant-made balls.

Grant & Wood Manufacturing Company
OHELSEA, MICHIGAN

BE POSITIVE IT'S A RUTENBER MOTOR IN THAT CAR YOU SELECT

YOU may then feel assured that you have the best power plant money can buy, guaranteed for life. You can find a Rutember motor in any priced car above \$1250, "Built to Use" and you will not part with one once you have owned and driven it.

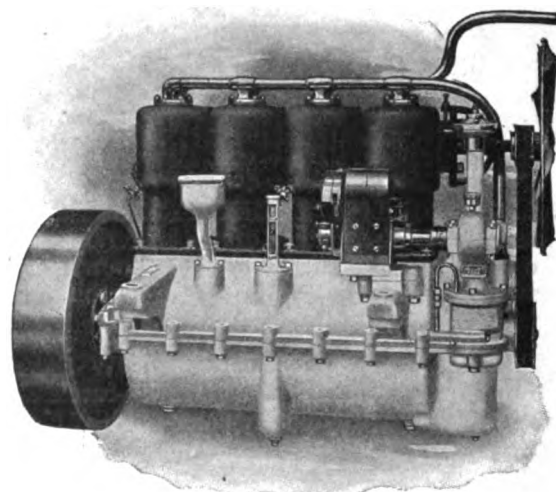
Exhibit No. 109, Coliseum Annex, Chicago.

If you buy a car before you see our exhibit and get acquainted with the Rutember motor, you'll always regret it.

When a motor outlives the rest of the car it's a real motor.

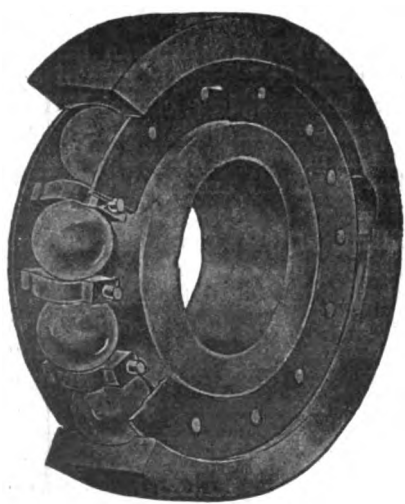
WRITE FOR CIRCULARS AND LIST OF USERS

W E S T E R N M O T O R C O M P A N Y
MARION, IND. Sales Department, Marion, Ind. LOGANSPOUT, IND.



Magneto Side—Model "RA"
1911 Model—25 to 50 H. P.

**The Pioneers to Employ 92%
of Balls in the Raceway**



SCHAFER

Ball Bearings

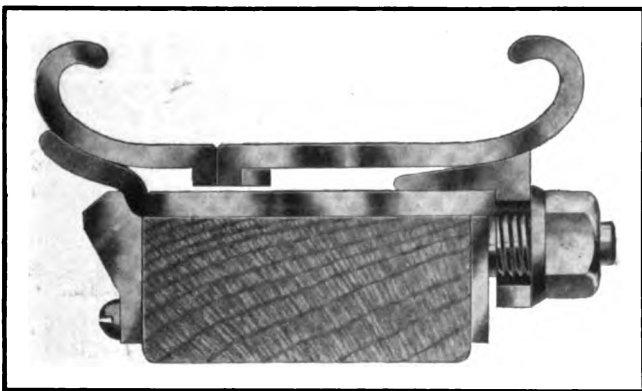
Fear No Comparison

GREATER LOADS Under the loads we advocate, and which will be found to be from 10 to 30 per cent. greater than any other manufacturers allow, wear is so slight as to be entirely negligible during the life of an active machine.

WRITE FOR CATALOGUE

SOLE IMPORTERS

BARTHEL, DALY & MILLER, 42 Broadway, New York City



THE STANDARD UNIVERSAL QUICK DETACHABLE DEMOUNTABLE No. 3

For Clincher Type Tires Only

This rim is in effect a Standard Clincher Rim that has been made separable. A number of L shaped frets extend around the inner edge of one section which correspond to a number of raised lugs or teeth on the other section. In assembling these two sections are brought together so that the frets and lugs are in a position to engage. A slight rotary movement then completes engagement and a definite lock is accomplished by means of a spring hinge device. The rim is mounted on a well-known and popular demountable equipment and, as a whole, is strong, thoroughly safe and always dependable. It stands the test of service.

THE STANDARD WELDING COMPANY

PIONEER RIM MAKERS

CLEVELAND

DETROIT

CHICAGO

NEW YORK

BROWN-LIPE GEAR COMPANY BROWN-LIPE-CHAPIN COMPANY

Announcement

On January 1st our Differential Gear Department began to be operated by the Brown-Lipe-Chapin Company in its magnificent new plant; capacity, 200,000 Differentials per year.

Our Transmission and Steering Gear Departments will continue as heretofore only with facilities increased many times.

We are preparing a line of Transmission, Steering and Differential Gears for trucks and delivery wagons and will work up this branch of the business, which for lack of facilities we have been unable to properly do heretofore.

All Will be Brown-Lipe Gears

Both plants will be under the same management and selling organization; the stockholders of the Brown-Lipe Gear Company holding a controlling interest in the new company. Both factories at Syracuse, N. Y. High quality and prompt service is our motto.

H. W. CHAPIN, General Manager

SALES REPRESENTATIVES.

THOS. J. WETZEL, 17 W. 42nd St., New York, N. Y.

K. FRANKLIN PETERSON, 150 Michigan Ave., Chicago, Ill.

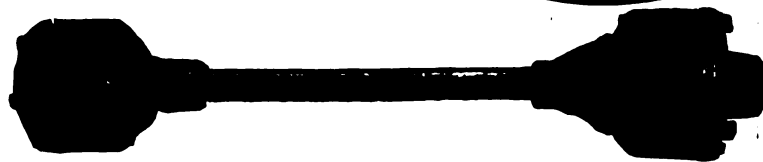
L. D. Bolton, 1810 Ford Bldg., Detroit, Mich.



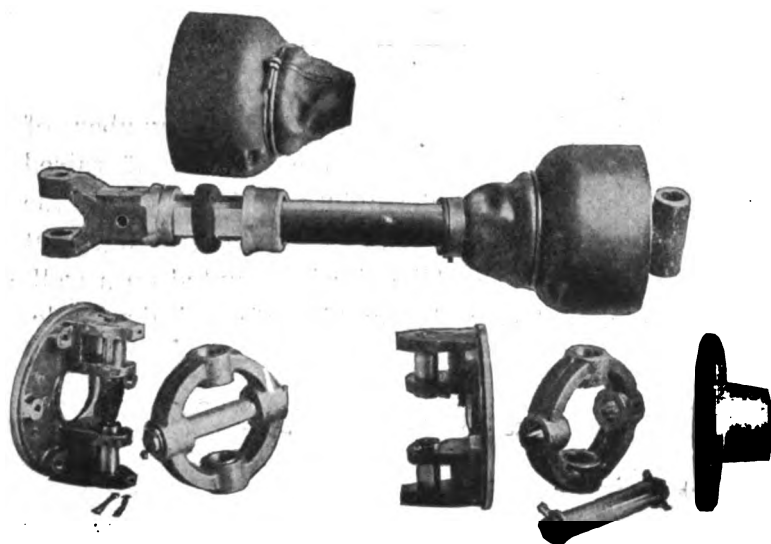
YOU'LL WANT THIS UNIVERSAL JOINT



If the best is none too good for you. "That's a mighty good joint"—is the verdict of all leading automobile Engineers.



Type F-400 Complete Drive



Type F-400 Drive Disassembled

We have in this style of Universal Joint all the desirable features you could wish for.

The material is A-1, all drop forgings. Large bearing surfaces, case hardened and ground.

Grease-tight and dust-proof. Easy to assemble and disassemble, also very convenient to assemble on a chassis. The strongest joint made for its size.

Pay you to look into this thoroughly.

Our capacity almost unlimited on standard material.

The Hartford Auto Parts Company
85 Huyshope Ave. Hartford, Conn.

SIMMS MAGNETOS

**The Simms Motor
Starter makes driving
a pleasure.**

STARTS the motor from the seat. Very simple—no complicated high tension wiring, no high tension switch, no separate coil.

RADICALLY different from so-called dual systems.

SEE it at Stand 587, Madison Square Garden Automobile Show, January 7-21.



THE SIMMS MAGNETO CO.
1780 BROADWAY NEW YORK CITY

London Representative:
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WETHERILL FINISHED CASTINGS

¶ Die cast from Parson's white brass make the finest kind of engine bearings.

¶ Absolutely accurate and every one interchangeable.

¶ We are now making 25,000 bearings per day, and increasing output as rapidly as possible. A case where quality is recognized and put to use.

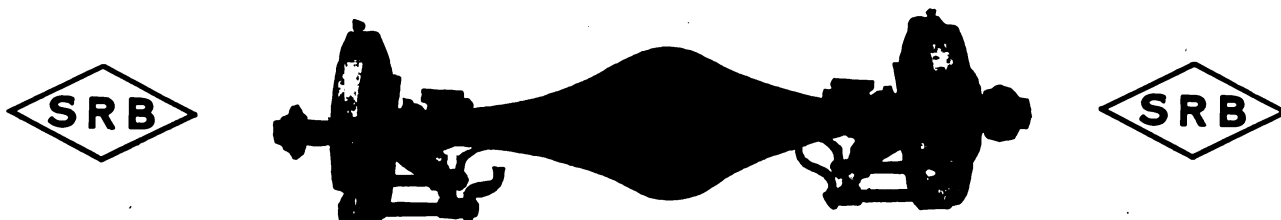
**WETHERILL FINISHED
CASTINGS COMPANY**
PHILADELPHIA, PA.

S. G. V. Cars

LICENSED UNDER SELDEN PATENT

THE ACME MOTOR CAR COMPANY
announces an exhibit of S. G. V. cars at
the Hotel Waldorf, New York, January fifth
to fifteenth.

STANDARD BEARINGS AND AXLES



STANDARD IN NAME, QUALITY AND DESIGN

Our Product is Used by 97 Per Cent. of American Motor Car Manufacturers

Standard Annular Ball Bearings

Standard Taper Roller Bearings

(Light, Medium and Heavy Series)

Standard Grooved Ball Thrust Bearings

Standard Journal Roller Bearings



Standard Annular Roller Bearings

Standard Ball Thrust Collar Bearings

Standard Roller Motor Bearings

"Standard Alloy" and
"High Duty" Steel Balls

STANDARD ROLLER BEARING COMPANY, Philadelphia, Pa.

110,000 Pressed Steel Automobile Frames Our Output—August 1st, 1909, to August 1st, 1910.

Over 110,000 frames actually shipped during the past year is a record of which we are justly proud. Our customers include 60 per cent. of the reliable motor car makers of America, and they attest the splendid service we give and the excellent quality of our workmanship, recognizing the fact that a "SMITH" frame is a distinct mark of quality and a valuable selling point for their agents. The great capacity of our new plant (1000 frames per day) enables us to take on additional business for the coming year, and we extend to you the opportunity to enhance the value of your car by the use of a "SMITH" frame.

SEND BLUE PRINTS FOR QUOTATIONS.

FRAMES
AXLES
CLUTCHES

A. O. SMITH CO., Milwaukee, Wis.

TRANSMISSIONS
STEERING COLUMNS
STAMPINGS

Pressed Steel Work

and **STAMPINGS** for

Commercial Cars

A L L S I Z E S

OUR plant equipment is of the largest and most complete kind; our experience dates from the beginning of the automobile industry and our reputation guarantees the quality of the product. We are ready and willing to lend a helpful hand to builders and have a fund of valuable information which is at their disposal. Write us.

THE CROSBY CO., Buffalo, N. Y.

Manufacturers, engineers and purchasing agents in the automobile industry are cordially invited to inspect our line of

NAMEPLATES

at Space No. 153, Madison Square Garden, January 7 to 21, 1911

THE CHANDLER CO.

Springfield, Mass.

VULCAN GEAR WORKS

PONTIAC MICHIGAN
MANUFACTURERS OF CUT GEARS



Automobile Gears a Specialty

DIFFERENTIALS — TRANSMISSIONS — STEERING GEARS

SEND BLUE PRINTS FOR QUOTATION



PREMIER

The Proven Car

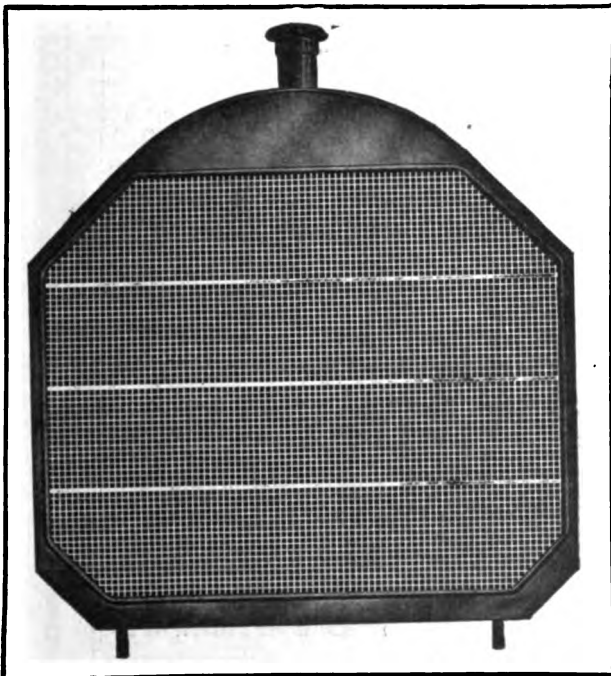
It is a significant fact that 84% of those who have purchased Premier motor cars in the last four years are still driving Premier cars.

Moreover, 75% of those who have purchased these Premier cars in the past three years are still driving their original cars.

PREMIER MOTOR MFG. COMPANY, Dept. S, Indianapolis, Ind.

Licensed under Selden patent.

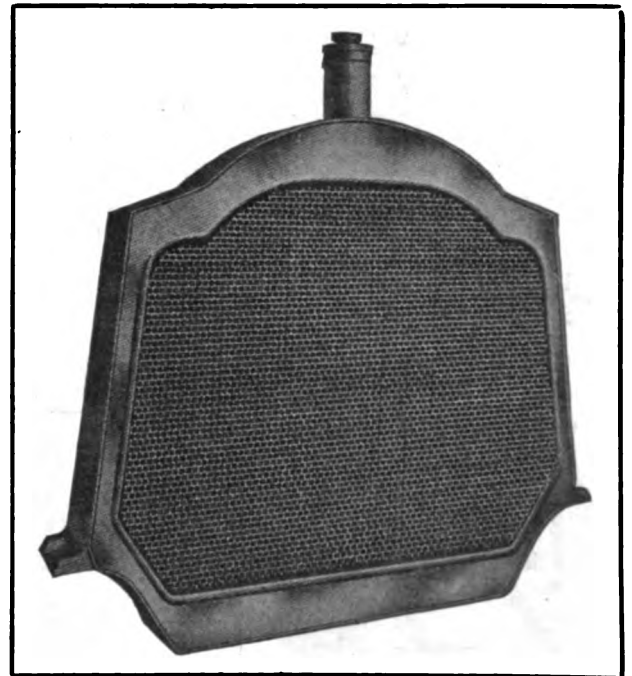
FEDDERS REAL SQUARE TUBE RADIATORS



No square tube "effect" or imitation, but made of individual square tubes. Of course the real square tube is better, that's why the others imitate it in appearance. They can't make the real article at the price.

Furnished with tubes staggered or Mercedes finish, as shown on cuts.

See Fedders Radiators on such cars as Packard, Thomas, Pierce, Haynes, Matheson, National, etc.



FEDDERS MANUFACTURING WORKS, Buffalo, N. Y.

Empire Tires

WEAR LONGEST

EMPIRE TIRE CO., Trenton, N.J.

Regal 30

"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

\$1250

Runabout, Baby Tonneau, Touring Car, Coupe

Greatest Automobile Value in America

WRITE FOR OUR LITERATURE

REGAL MOTOR CAR COMPANY, Detroit, Mich.

Warner Gear Co.

MUNCIE, INDIANA



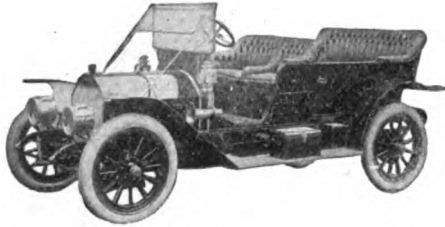
**Steering Gears
Transmissions
Differentials
Clutches and
Control Levers**

MODEL 95—UNIT TRANSMISSION
Brake and Clutch with Raybestos-faced Discs.
25-35 H. P.

MERCER

TOURING CAR
TOY TONNEAU
SPEEDSTER

Each \$2150




Style, Luxury, Quality, Strength, Speed.

Made Right and Stays Right

Let us hear from you.

MERCER AUTOMOBILE CO., Box 126, Trenton, N. J.

\$1,600 Cartercar



Model "L," 4 cylinder, 30-35 H.P., 110 inch wheel base, 5 passenger, Friction Transmission. Chain-in-Oil Drive, any number of speeds, will climb a 50% grade with load, including magneto, gas lamps, generator, horn, mats, tools, jack, etc. \$1,600.

Model "H," 4 cylinder, 25 H.P., 100 inch wheel base, Runabout \$1,100. Double Rumble \$1,125. Double Divided Rear Seat \$1,150. Miniature Tonneau \$1,150.

Write for 1910 catalog.

CARTERCAR CO.

Pontiac, Mich.
Licensed Under Selden Patent.

K-R-I-T


"The car with the invisible start."

96 in. wheel base
32 in. wheels
Sliding gear transmission. Multiple disc clutch. Weight, 1200 lbs.

22½ H. P. \$800

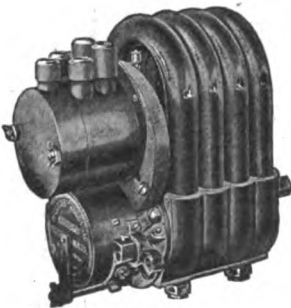
Runabout \$800.
Roadster \$825.
Surrey \$850.

Write for Catalog



**K-R-I-T Motor
Car Company
DETROIT**

Heinze High Tension Magneto



Construction—Mechanically unequalled.

Durability—Greater than the life of the car.

Efficiency—Proven by the users.

Catalogue H with full information is yours for the asking.

HEINZE ELECTRIC COMPANY
Lowell, Massachusetts

FREE OIL

Generous sample "3-in-One" for your sewing machine; oils perfectly; won't gum, collect dust, turn rancid; lasts long; free from acid.

RUST

positively prevented by "3-in-One" on anything indoors or out; keeps everything bright; oils everything right; free from acid.

SQUEAKS

stopped; "3-in-One" oils everything right—locks, clocks, hinges, sewing machines, typewriters; generous free sample sent by Three in One Oil Co., 64 Broadway, New York.



Send for a Booklet which gives a complete description of the Kamlee Trunk—it tells how it is built, (of bass wood veneer, not pulp composition), how strong and durable it is, and just why the

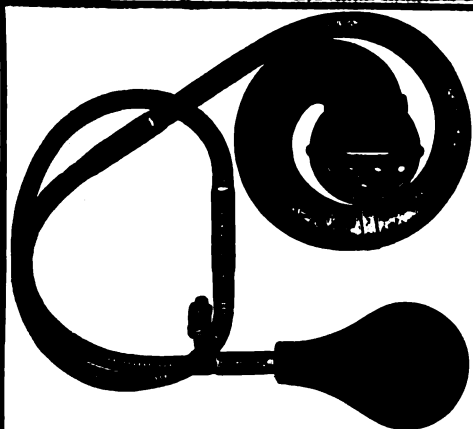
KAMLEE Auto Trunk

is the only trunk that meets all the requirements of the motorist. There is a "Kamlee" for you, no matter what your car may be—it is built to conform to the shape of the tonneau of any make or type of car. Your name and address on a postal will get the booklet.

The Kamlee Co.
345 Milwaukee St.,
Milwaukee, Wis.

The Kamlee is fully protected by patents, and any infringements will be vigorously prosecuted.

It isn't a Kamlee if this trademark is not on the front—in red and gold. Look for the "K."



**VOLIER
"Le Chantecler"
HORN**

One of Our
Automobile
Specialties

**1911 Catalog
Now Ready**

EVERY LIVE DEALER must have a copy of our catalog—we keep you in touch with the new and all the practical necessities for motor service.

**Motor Car
Specialties**
for the
Jobbing Trade



HARTFORD, CONN.

1911
Greetings

**J. S. Bretz
and Associates**

MEET US AT THE

Garden Show
Space 586, Basement

PART I.—JANUARY 7—14
PART II.—JANUARY 16—21

F & S
Annular Ball Bearings

(MADE IN GERMANY)

The Dependable Kind—



The
**Master
Magnetol**

Bowden Patent Wire Mechanism
German Steel Balls

SERVICE and SATISFACTION

are assured when

G & J TIRES

are used.

G & J TIRE CO., Indianapolis, Ind.
We Sell Continental Demountable Rims.

Driver Geo. Clark Added More

victories in the Dallas, Texas, meet to the long string which he has annexed this summer in a Cutting 40 equipped with a

Remy Magneto

"Best in the World"

REMY ELECTRIC COMPANY
Anderson, Ind.

Packard

CABLE

Is
Absolutely
Sure

Don't take
chances on
the wiring of

your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

Just put on Packard Cable and forget all about your ignition troubles
NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY
Send for samples and prices before ordering elsewhere
THE PACKARD ELECTRIC CO., 4328 Dana Ave., Warren, O.

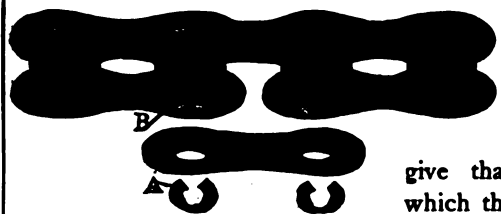
Woodworth

WOODWORTH TREADS are the only true tire protectors. They never chafe or heat the tires. They are held in place by coil springs along the sides, which automatically take up all slack and prevent any looseness. The protector is always tight and smooth.

No other protector can be fitted in the way that these automatically fit themselves.

They fit all makes of tires—anyone can easily put them on. *Send for Catalogue.*

Leather Tire Goods Co., Niagara Falls, N. Y.
Canadian trade supplied from Niagara Falls, Ont.



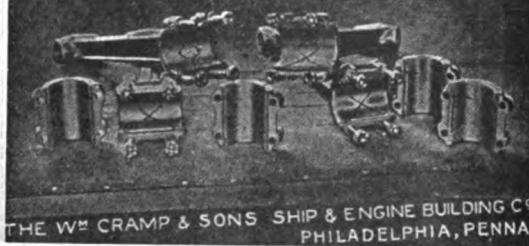
Baldwin Chains

give that kind of service which the buyer has a right to expect from chains which have been chosen because of their well-known quality; accuracy in pitch and durability being especially distinguishing features.

BALDWIN CHAIN & MFG. COMPANY
Worcester, Mass.

SALESMEN—H. V. GREENWOOD, 166 Lake St., Chicago, Ill.; C. J. IVEN, Rochester, N. Y.; M. A. BRYTE, 788 Mission St., San Francisco, Cal.

30,000 MILES WITHOUT ADJUSTMENT.
THESE PARSONS WHITE BRASS BEARINGS RAN THAT DISTANCE IN A PACKARD CAR. THEY ARE BACK IN THE CAR WITHOUT EVEN BEING SCRAPED
STILL RUNNING RUNNING STILL.



Cramp — Metals

THE W. CRAMP & SONS SHIP & ENGINE BUILDING CO.
PHILADELPHIA, PENNA.

PRESSED STEEL

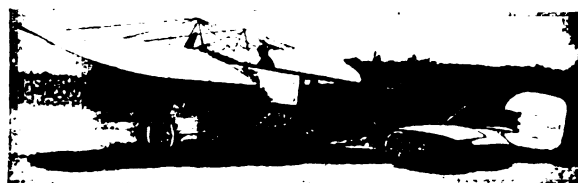
Automobile Frames

Running Boards

AND

General Stampings

THE PARISH & BINGHAM CO., Cleveland, Ohio



METZ AIR CAR—BLERIOT TYPE.

EVERYBODY MAY FLY

Aeroplanes complete or in the knock-down. Motors 30, 60 and 120 H. P.; propellers and all component parts.
Manufacturers of Metz Runabouts—lightest and most economical automobile in the world.

We want live progressive dealers everywhere.

METZ COMPANY, Waltham, Mass.

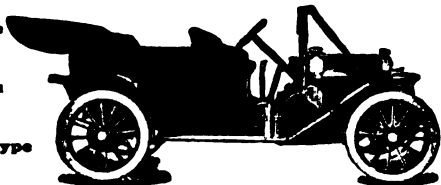
Moline "35"

Winner Chicago Trophy 1910 Glidden Tour
Winner Team Trophy 1000 Mile Chicago Run

Touring Type
\$1650

Toy Tonneau
\$1600

Fore Door Type
\$1700



35 H. P.
36 in. Wheels
112 in.
Wheel Base

Write for
Catalog
No. 61

MOLINE AUTOMOBILE CO., 61 Keokuk Street, E. Moline, Ill.

Life Often Depends on the Brake Lining

Probably 50% of all automobile accidents are due to inability to stop the car quickly enough—due to failure of the brake lining to grip. There is one brake lining which can always be depended on to lock wheels instantly—that can be relied upon to avert accident in emergency—that is

J-M NON-BURN BRAKE LINING

And it can be depended on not only when new, but as long as it lasts; and it will outlast at least twelve ordinary brake linings.

It is a mineral fabric—made of pure asbestos, reinforced with brass wires—and grips like a vise when the brakes are set hard; but at other times takes hold as gently as desired. Frictional heat won't char or burn it. Oil, water or gasoline won't injure it.

Send for sample and free hand-book on auto brakes.

H. W. JOHNS - MANVILLE CO.

Baltimore
Boston
Buffalo
Chicago

Cleveland
Dallas
Detroit
Kansas City

London
Los Angeles
Milwaukee
Minneapolis

New Orleans
New York
Philadelphia
Pittsburg

San Francisco
Seattle
St. Louis
(1336)

DO YOU WANT DIE CASTINGS FREE

from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?

Van Wagner makes that kind.

Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. **WRITE US.**

E. B. Van Wagner Mfg. Co., 706 Union Bldg. SYRACUSE, N. Y.

You can buy

Rebuilt Thomas Flyers

and other makes practically as good as new which are cheaper and better than some new cars. Prices range from \$750 up. Second-hand small cars taken in exchange.

E. R. THOMAS MOTOR CO., BUFFALO NEW YORK

New York Branch: Broadway and 63d Street
Boston Branch: 587 Boylston Street
Chicago Branch: 2255 Michigan Avenue

Runmobile

GUARANTEED FOR LIFE

The most economical car in the world

Runabout \$750 Touring Car \$900
Torpedo Runabout . . . \$850 Coupe \$1100

HUPP MOTOR CAR COMPANY

Dept. K

DETROIT, MICH.

Licensed under Selden patent.



A Perfect Tire Gauge at Last!

If you are not using a Tire Gauge get one of these at once; and if you are using one which you cannot depend on, send for an Edelmenn Tire Gauge, guaranteed absolutely accurate.

This Gauge is self indicating, and the pointer hand remains at the maximum pressure until it is re-set. To operate, simply press against Tire Valve, then read the pressure at your convenience.

PRICE \$1.50 at all dealers, or by registered mail on receipt of price.

E. EDELMANN & CO.

47-49 W. Kinzie St.

Chicago

STAYER CHICAGO

We have a dealers' proposition for 1911 decidedly different, because it was planned from the dealers' standpoint. It means a great car with a 100% perfect selling plan and a price proposition in a class by itself.

30, 35 and 40 h. p. cars—\$1450 to \$2000. Dealers everywhere are investigating. How about you?

STAYER CARRIAGE COMPANY

Dept. 9011 76th and Wallace Sts., CHICAGO

DIAMOND CHAINS

are and have been the recognized quality standard for 20 years. Strong, accurate and durable. Let us cut your sprockets.

DIAMOND CHAIN & MFG. CO.

150 W. Georgia St.

Indianapolis, Ind.

Capacity 8,000,000 feet per year.

MONEY SAVERS AND MONEY GETTERS

Atterbury Commercial Wagons and Trucks

FULL INFORMATION UPON APPLICATION

WE make vehicles for any kind of business, guarantee efficient service and as one of the oldest makers of commercial power-wagons our product is a known and fixed quantity. We can interest any merchant interested in effecting a business economy.

ATTERBURY MOTOR CAR COMPANY, Buffalo, N. Y.

LION "40"

40 HORSEPOWER—36 IN. WHEELS—112 IN. WHEELBASE

5-Passenger Touring Car, fully equipped, \$1500

4-Passenger Baby Tonneau, " " 1475

5-Passenger Gentleman's Roadster, " 1450

THE LION MOTOR SALES COMPANY

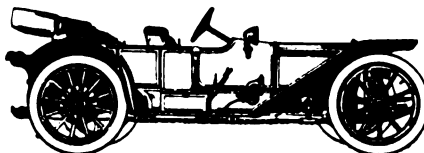
650 Woodward Avenue

Detroit, Michigan

THE AMERICAN

"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading cities. Increased output this year offers a new opportunity to buyer and dealer alike.



SEMI-TORPEDO TRAVELER

Underlung frame; 40 in. wheels; 4 cyl.; 50 H. P., \$4250.

AMERICAN MOTOR CAR CO., Dept. Y, Indianapolis, Ind.
Licensed under Selden patent.

THE 1911 OWEN

The 1911 OWEN BERLIN represents the highest development of closed car construction. It is the embodiment of comfort with exclusive features affording greater convenience than can be enjoyed in other cars. The easy running qualities of the OWEN BERLIN are unequaled because of large wheels, OWEN spring suspension and minimum vibration from the long stroke motor. Combining these features with interior appointments of the most luxurious character, the OWEN BERLIN (seating six) is a car certain to please the most exacting.

Catalog and detailed descriptive matter sent upon request.

OWEN MOTOR CAR COMPANY

1620 East Grand Boulevard

DETROIT, MICH.

LEST YOU FORGET

Write today for copy
1911 Catalog. Missing
means losing.

Ford Motor Company DETROIT, MICH.

KLINE KAR

**A Complete Line
For the Agent**

Four Cylinder Cars - 24 to 40 H. P.
\$1500 to \$2 50

Six Cylinder Cars—50 to 60 H. P.
\$2650 to \$3250

**KLINE-KAR OWNERS ARE
SATISFIED CUSTOMERS**

BCK MOTOR CAR COMPANY, York, Pa.

Write for Catalogue and Territory.



IN this page, next week, the Lovell-McConnell Manufacturing Company, Newark, New Jersey, makers of the **KLAXON** Warning Signal, will announce the **RAISWELL** Lifting Device.

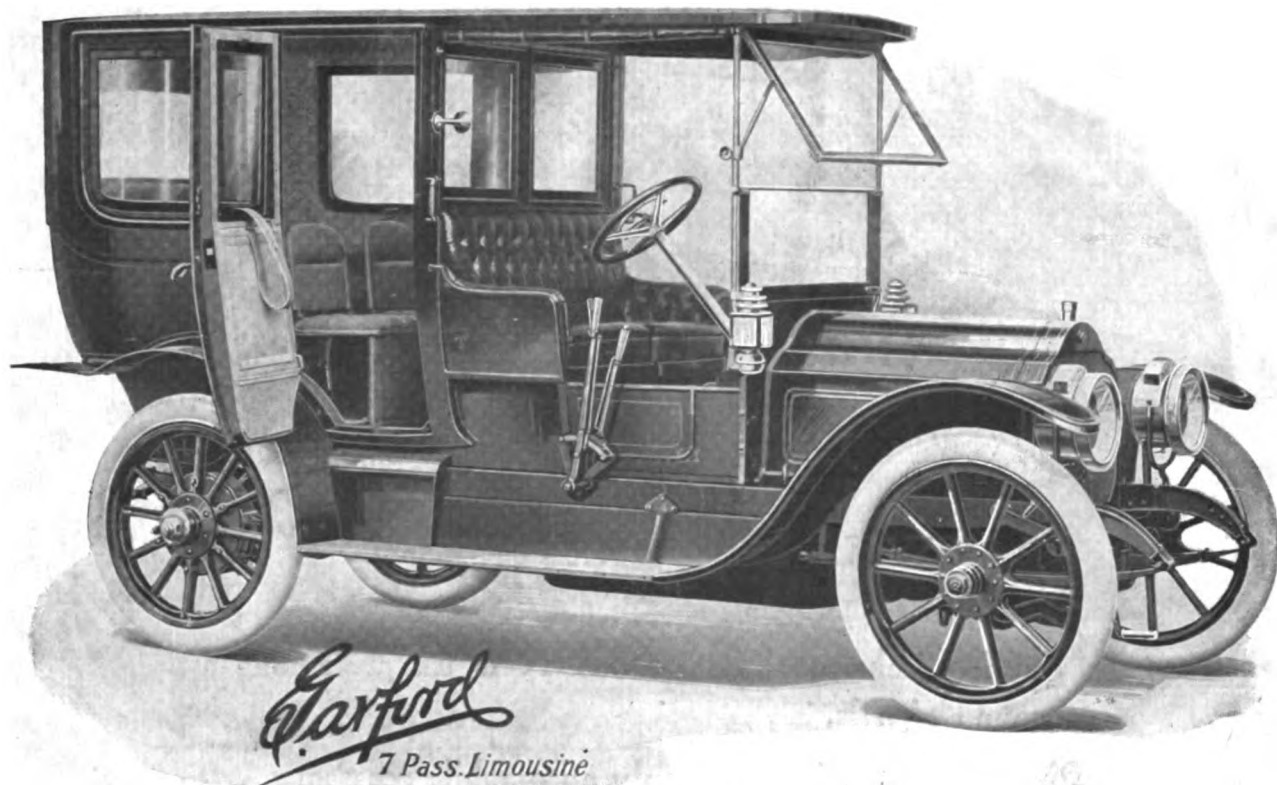
The **RAISWELL** is as different from all other lifting jacks as the **KLAXON** is unique among all sound signals.

Moreover, it is the only automobile accessory, outside of the **KLAXON** Warning Signal, that the Lovell-McConnell Manufacturing Company has seen fit to manufacture and stand back of—this after two years of investigation, during which time several hundred patented automobile accessories have been offered them for manufacture and sale.

The price of the **RAISWELL**—ten dollars—three to five times greater than the price of any other lifting jack, may occasion surprise.

Next week's illustrated advertisement explains why.

The **RAISWELL** will be marketed under the same restricted license system that governs the sale of the **KLAXON** Warning Signal.



THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

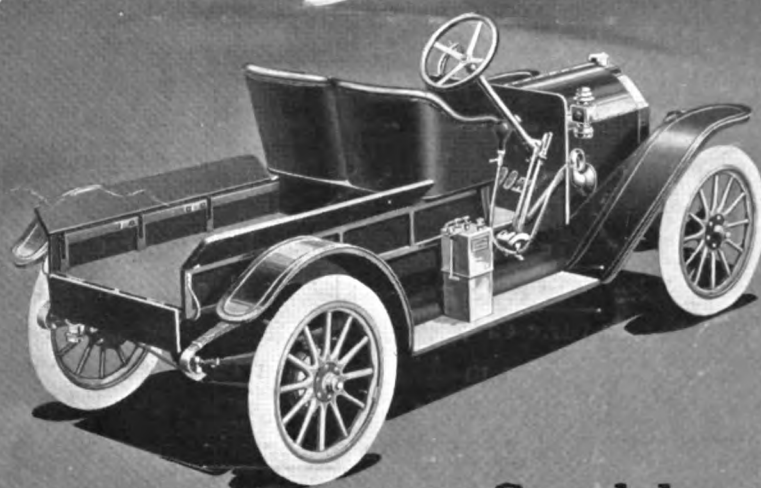
Licensed under Selden patent.

ON EXHIBITION AT NEW YORK AND CHICAGO SHOWS.

THE MOTOR WORLD

A trade paper giving the
World's Motor News

Ten cents a copy—
Two dollars a year



Stoddard-20 Commercial Wagon

A brand new proposition. Above shows it with Side Boards (regular equipment) in place. Carrying space 30x55. Capacity 750 lbs. Rear seat can be instantly put in place, making it a complete pleasure car for four passengers. Fully equipped (f. o. b. Dayton) \$1325.

The Dayton Motor Car Co
Dayton, Ohio

HARTFORD

Wire Grip Non-Skid Tires

(Midgley Tread)

The Tire That Has
Solved The Problem Tire
Makers Have Been Working
On For Years.

The Hartford Wire Grip Non-Skid Tire is the only true non-skid that is resilient;

The only true non-skid that does not rack and ruin the car;

The only true non-skid that does not mar the easy riding qualities of the car;

The only non-skid that you carry right with you in the tread of the tire itself;

In other words, it is a pneumatic tire, and a non-skid tire combined; Insure your car, its passengers and the public by putting them on your car now.

This tire is made in standard sizes, Dunlop, Hartford, Quick Detachable Clincher and Clincher; also in millimeter sizes.

WE SELL CONTINENTAL DEMOUNTABLE RIMS

The Hartford Rubber Works Co.
HARTFORD, CONN.

BRANCHES—New York, 57th St. and Broadway; Chicago, 12th St. and Michigan Ave.; Boston, 863 Boylston St.; Philadelphia, 1334 Arch St.; Detroit, 256 Jefferson Ave.; Buffalo, 725 Main St.; Cleveland, 1831 Euclid Ave.; Denver, 1564 Broadway; Atlanta, Ga., 19 Houston St.; Minneapolis, 622 Third Ave., So.; Kansas City, Mo., 719 E. 15th St.; Dallas, Texas, 2029 Commerce St.; St. Louis, Mo., 19th and Locust Sts.

AGENCIES—Chanslor & Lyon Motor Supply Co., San Francisco, Cal.; Los Angeles, Cal.; Fresno, Cal.; Spokane, Wash.; Seattle, Wash.; F. P. Keenan Co., Portland, Ore.; Jos. Woodwell Co., Pittsburg, Pa.; Mercantile Lumber & Supply Co., Kansas City, Mo.





30-60 H. P.
Seven Passenger
Touring Car

Every Stearns Owner is An Experienced Motorist

The vast majority of Stearns owners have owned other makes of cars. They figured that their initial investment was less—and so it was—but the steady upkeep drain soon showed their error. The other class of Stearns owners bought Stearns cars in the beginning—and they do not care to drive anything else.

When you buy your car you should buy for the future. Figure the cost by the year, for that is the only right way. Cars that seem to be cheaper are not nearly so cheap in the long run.

The Stearns grows better with use. That is the experience of Stearns owners. The car's second year is better than its first—its

third, fourth and fifth as good as its second. It relieves the owner of the constant worries, cares, uncertainties and expense that must go with cars that seem to be cheaper—cars whose price prohibits absolutely the carefully selected materials and skilled workmanship so characteristic of the Stearns product. Cars whose price (to the man who knows costs) tells of short life, heavy maintenance charges and quick depreciation.

It will pay you to learn the Stearns story—a story of seventeen years of unrivalled success—a story of a car that has won and holds its place through sheer merit. Our latest literature tells the facts—mailed to your address upon request.

30-60 H. P.
Model
Shaft or
Chain Drive

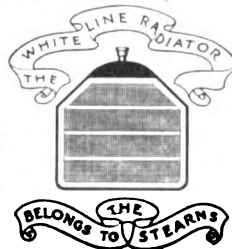
The F. B. Stearns Company

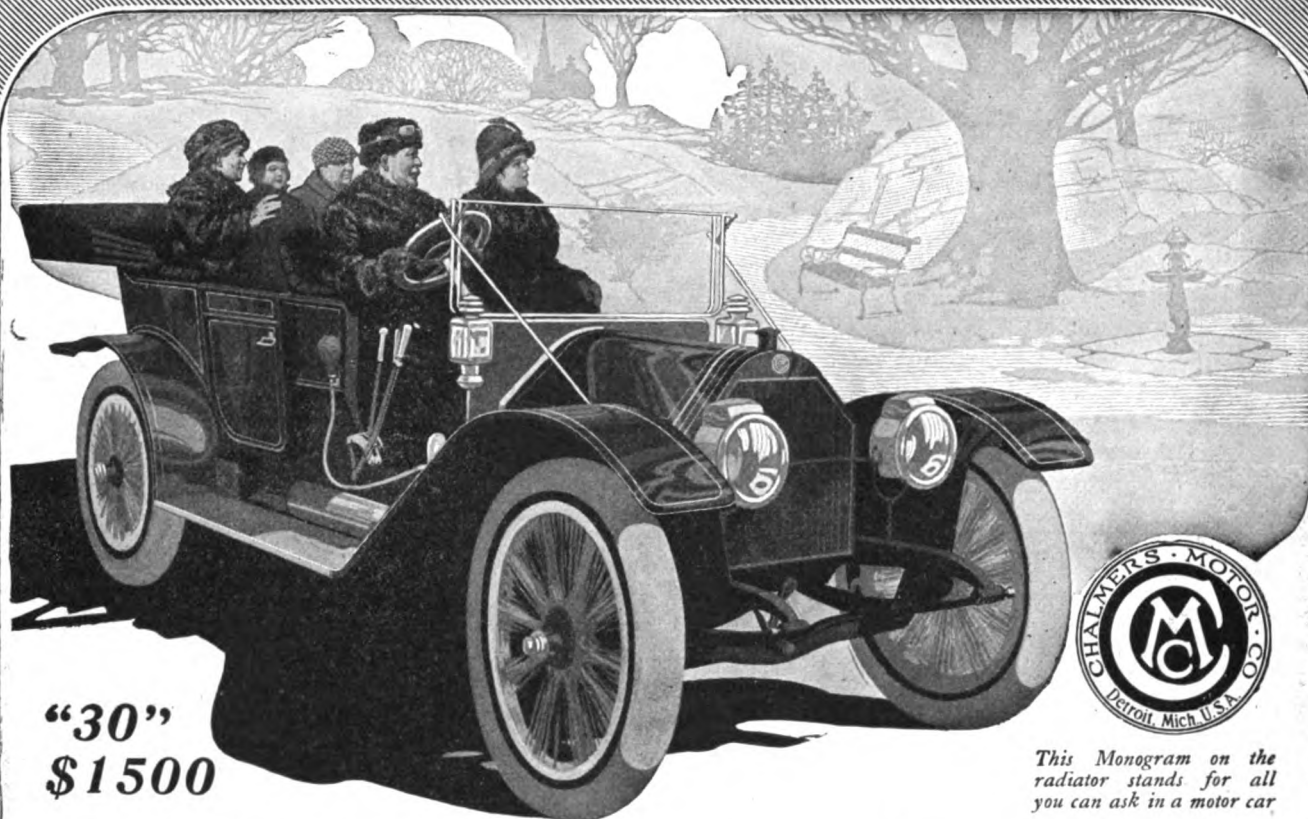
Licensed Under Selden Patent
Cleveland, Ohio

15-30 H. P.
Model
Shaft
Drive

Pacific Coast Distributing Office,
Van Ness Ave., cor. Sacramento, 'Frisco

Dealers and Branches in all
Principal Towns and Cities





"30"
\$1500

This Monogram on the radiator stands for all you can ask in a motor car

Our Guide for Buyers

The season of Automobile Shows is here. An excellent chance for careful comparisons, as the cars stand almost side by side. The multitude of cars and the claims of salesmen are confusing—especially to first-time buyers. So here follow a few points which may be used as standards when selecting and buying.

First, learn if a car has proved itself a good *machine*, considered purely as a machine. Service in the hands of owners and performance in contests are the only absolute proofs. This test will eliminate some.

There are many good cars nowadays, mechanically considered. After you have settled on several that are, in your opinion, of about equal merit as *machines*, compare them from other viewpoints.

Beauty first. There is beauty of line and beauty of finish, and beauty in a motor car is deeper than paint. It goes down to the materials and the construction. It means something in addition to eye-delight.

Then look carefully to the matter of comfort—comfort for the passengers and comfort for the driver. Comfort and mere bigness don't necessarily go together.

During demonstrations note how the cars treat you when going over rough spots; note how you feel after riding for an hour in different cars; note whether the seats have springs in them, whether they are tilted; whether the cushion fits your back and shoulders, or not.

Observe the springs on different cars, how they act when called into play. Observe how bodies are suspended, whether they hang between the axles or whether the tonneau seat is high over the rear axle. Note whether the cars are resilient—or harsh.

Sit behind the steering wheels of other cars. Note whether your position there is comfortable—whether the gear shift lever and the emergency brake lever are near at hand or whether you must stoop over to reach them. Note the position of the pedals, of the throttle and the accelerator. And do the same with the Chalmers car.

Look carefully to the four main factors of safety: frame, wheels, steering connections, brakes. You cannot examine these with too much care. Examine the refinements—the wood in dash and door strips and body; the levers, the pedals, the door handles and locks, the floor coverings, foot rests and all the other "little things." See what they are like on other cars. Then on the Chalmers.

Scrutinize the workmanship on the chassis of the Chalmers. Look at the motor, see what a neat, clean job it is. Then note the simplicity in the design of the car from end to end.

Comparison with all other cars has sold more Chalmers than all our advertising.

A feature of our complete exhibits at all leading Automobile Shows this winter will be cut out chassis of the Chalmers "30" with every moving part exposed and in operation. We are proud of every part, so show them all.

There is always a Chalmers dealer near you. He is a busy man, but will always find time to answer with courtesy and integrity all your questions, and to demonstrate thoroughly for you Chalmers cars—"30" \$1500; "Forty" \$2750. Catalogue "AC" on request.

Don't Think Thoughts Six Years Old

Many a business man has said, "I'm not enough of a mechanic to run an automobile, and I can't afford to keep a chauffeur or pay big garage bills to keep my car in order."

The man who says this is thinking in terms of six years ago.

Six years ago such a statement would not have been so far amiss. But the world has moved in six years and the making of automobiles has shown more progress than nearly anything else.

You can buy a real automobile now for as low a price as \$1500. It is so simple to operate that you can, and should, drive it yourself. It is so trouble-proof that you won't need to keep it in a garage and have high-priced mechanics tinkering with it all the time.

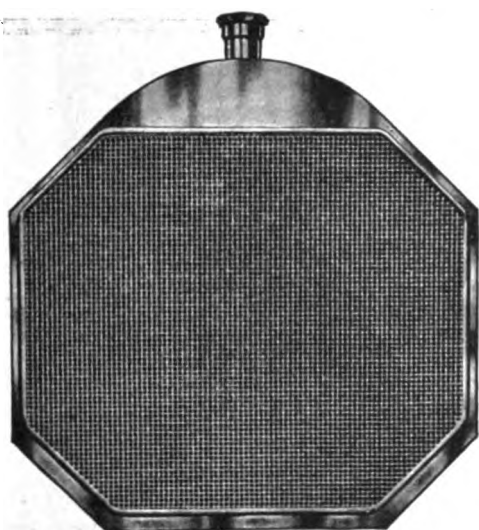
Six years ago there was scarcely a *real* automobile to be had at any price. But now—just look around you. See the thousands of men like yourself who use them constantly. Talk to your neighbor who has one. He will give you the straight tip, if you can ever get him to stop enjoying himself in the fresh air long enough to do it.

There are many good cars nowadays, and any good car made by one of the well-established companies is a good investment.

Of course we would like the privilege of showing you the Chalmers before you buy. We know that we have excellent cars, yet if we can't convince you that we offer better value, dollar for dollar, than anyone else, why that is our fault, not yours.

Chalmers Motor Company (Licensed under Selden Patent)

Detroit, Michigan



The Mayo—the radiator thoroughbred

“LIFTING YOURSELF BY YOUR BOOT-STRAPS”

is just about as sensible as expecting to gain a reputation by doing today what everybody else has been doing indefinitely. In the search to improve, Mayo Radiators have been a “find” to seekers on the right road.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT



“Arc Flame System” MAGNETO

Accurate and durable. Every part made of the finest kind of material, fashioned by skilful craftsmen and assembled under the most rigid inspection. Reliable and efficient in service.

High tension, with stationary, removable coil. No moving wire on the armature. Each spark is followed by an arc flame. This arc flame will ignite a much weaker mixture than with the spark produced by the usual coil ignition. A variation of 45 degrees is allowed on the magneto shaft, which means 45 degrees in the crank shaft for a four cylinder, four cycle motor, as the magneto runs at crank shaft speed. The retarded spark is just as efficient as the advanced spark, making it easy to start the motor with a quarter turn of the crank, with the timing lever fully retarded.

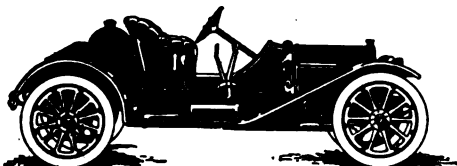
Get the catalog of the “Pittsfield Ignition System”

PITTSFIELD SPARK COIL COMPANY, Dalton, Mass.

SALES REPRESENTATIVES—NEW ENGLAND, W. J. Connell, 36 Columbus Ave., Boston. ATLANTIC STATES, Thomas J. Wetzel, 17 W. 42d St., New York. CENTRAL STATES, K. Franklin Peterson, H. V. Greenwood, 166 Lake St., Chicago. MICHIGAN, L. D. Bolton, 319 Hammond Building, Detroit. PACIFIC COAST, The Laugenour Co., San Francisco.

1911 Bergdoll

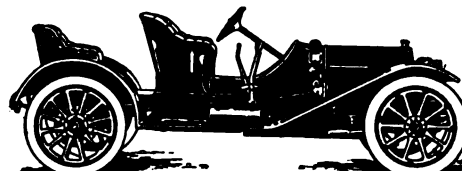
BACKED BY MILLIONS "30"



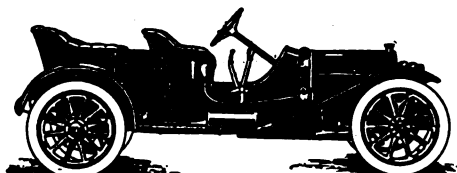
"LOUIS J." RUNABOUT, \$1,600



TOURING CAR, \$1,500



ROADSTER, \$1,500



TOY TONNEAU, \$1,600

IN offering our 1911 car for the public's approval we are doing so after two years of experimental work, embodying in a popular priced car all the practical features and advantages of the best foreign and domestic development.

In design and construction the Bergdoll "30" is simplicity itself and will give the reliability, efficiency and comfort of cars of double its market value. In manufacturing nothing has been forsaken that has proven its worth and we have adopted nothing without the most relentless tests. It is not remarkable in any one particular at the expense of all others and will meet the reasonable requirements of the average automobilist.

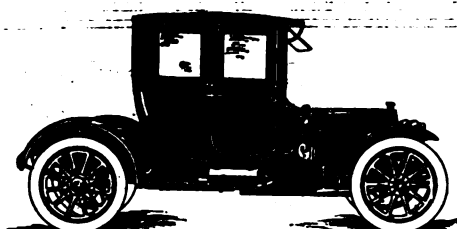
Contrary to the customary rule of building from one to three experimental cars, we built fifty of these machines and put them into taxicab service and they were turned over to inexperienced operators. These cabs at this writing have covered from seven to ten thousand miles with the best results.

One of the strongest claims which we make to any prospective buyer of our product is that we recognize our obligations to that customer as only beginning when he contracts for one of our cars, and we make every possible effort to care for each owner and see that he continues to obtain from his cars the satisfaction that he is entitled to.

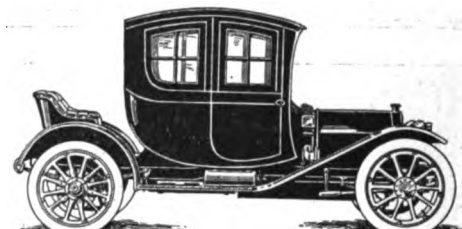
We consider the buyer the "court of last resort," and from his decision as to the merit of our car there is no appeal. The satisfied owner is the best salesman, and it is our hope to have fifteen hundred persons this coming season involuntarily selling Bergdoll "30's" to their acquaintances by explaining the points of superiority and proudly demonstrating their efficiency.



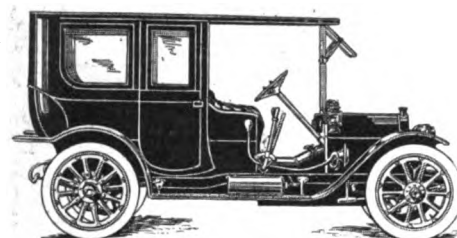
"4 DOOR" TOURING CAR, \$1,600



COUPE, \$2,000



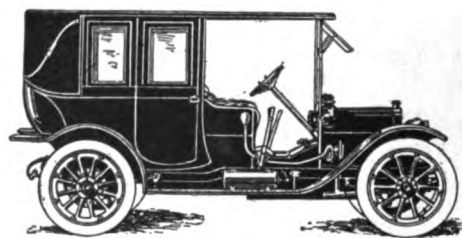
COLONIAL COUPE, \$2,500



LIMOUSINE, \$2,500

Louis J. Bergdoll

President.



TOWN CAR, \$2,600

During the week of the seventh to the fourteenth of January, we will exhibit one Chassis, one "4-Door," one Colonial Coupe and a Limousine at 1597 Broadway, New York City.

DELIVERIES ARE BEING MADE ACCORDING TO SCHEDULE

Complete Description and Specifications Appear in Our Advance Folder.

LOUIS J. BERGDOLL MOTOR COMPANY

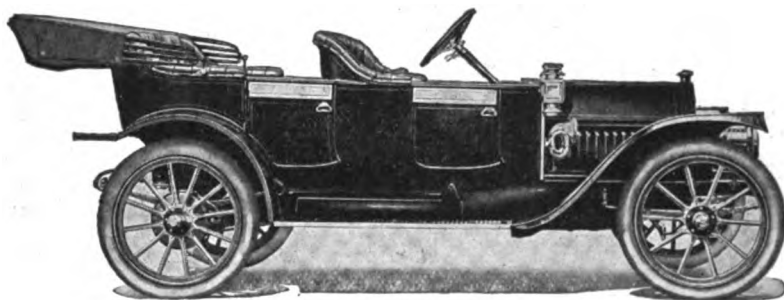
31st and Dauphin Streets

Department "S"

PHILADELPHIA, PENNA.

THE "EVERITT 30"

**The High-Grade Car at a Moderate Price. Manufactured
—Not Assembled—by Pioneers of the Industry**



**This Year We Can Make Deliveries—Prompt Deliveries. With
Factory Organization Now Complete, A Mechanical Equipment
Unexcelled, With Every Facility for Taking Care of Everitt
Dealers, We Can Place in Your Hands, When You Want
Them, Cars Which Are Right in Every Particular. Now Is the
Time to make Reservations for the Territory Still Unallotted**

The "Everitt 30" is the product of three long-experienced automobile men—pioneers in the automobile industry.

These men—Messrs. Everitt, Kelly and Metzger—long ago realized that as the manufacturing of motor cars settled down to a permanent basis, the demand would appear for a strictly high-grade product, selling at a moderate price.

For years they developed their ideas with other companies. For years they were connected with other concerns—experimenting, refining, organizing—making a record of successes unique in manufacturing history.

Fourteen months ago they deemed the time ripe for something better than the ordinary "quantity-proposition" car. They said: "We will establish a modern, well-equipped factory. We will build there, under our personal supervision, a limited number of strictly high-grade automobiles. We will use the very best of materials, manufacture every vital part ourselves, and, by the most rigid tests, know that every car we turn out is right. Then, building for a permanent future business, we will fix a low selling price and offer experienced buyers the greatest automobile value ever seen."

This is, briefly, the story behind the "Everitt 30." The first year saw the establishment of a splendid factory, equipped with every modern and labor-saving device. It saw the expenditure of more than a million dollars before a single car was put on the road. It saw the trial and rejection of scores of designs, parts and articles of equipment in the determination to use only the best. And finally, it saw the manufacture of 900 standard cars—the "Everitt 30."

The record of these 900 cars is an eloquent story of success. Each individual car has made its own record of service and satisfaction. Every buyer who purchased one of the cars has had something good to say about it. There have been no "come-backs." Every car has "made good."

And now, for the 1911 season, we are able to devote our whole attention to manufacturing. The development work is done. We now have the equipment, the experience and the facilities to manufacture a really remarkable product—a standardized product.

We will build, this year, about four thousand automobiles. We could manufacture, and sell, many more, were we willing to adopt the "hurry-up," slipshod methods now so common. But we will not allow a single car to leave this factory until we know it is right, even to the smallest detail.

Whether you are an automobile dealer or an automobile buyer, it will pay you to investigate the "Everitt." If you investigate carefully, you can come to but one conclusion.

It may be that you have not had the experience which will show you what "Everitt" construction means to you. It takes an expert to thoroughly appreciate this car.

Certain features at least will be apparent at a glance. The simplified, powerful, long-stroke motor, cast "en bloc," with 150 less parts than ordinarily. The double-drop frame, giving low center of gravity, found elsewhere on only the most expensive cars. The comparative light weight—only 2,300 pounds on the scale. The combination and reduction of parts and their accessibility. The "honey-comb" radiator. The Bosch ignition—finest in the world. The handsome and roomy body design. These and a hundred other features will instantly appeal to the man who knows cars.

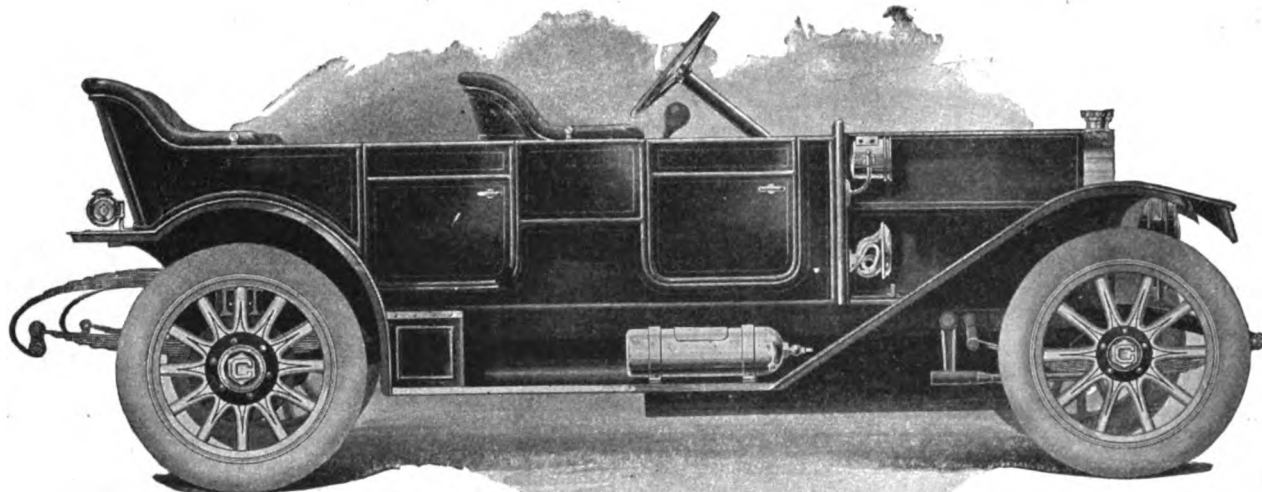
The price of the "Everitt 30" has been fixed at \$1,350, including equipment. The fore-door types cost \$50 more. There are seven body-designs, including Coupe and Delivery Wagon types. We invite you to see them or to write at once for the catalog. Reliable representatives are wanted everywhere.

**See Our Exhibit at
The New York Show
SPACE 116**

METZGER MOTOR CAR CO. Licensed Under Selden Patent. **DETROIT, MICH.**

THE COLBY \$1750

Built to Compete with \$3000 Machines



SPECIFICATIONS

Body: Standard touring straight line. Seating capacity, five. Fore-doors.

Motor: Four Cylinder—H. P., 35-40. Bore, $4\frac{1}{4}$; stroke, $5\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.

Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.

Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system.

Carburation: Carburetor—special fuel feed—gravity.

Clutch: Type—multiple disc. Friction surfaces—steel to steel.

Gearset: Selective—located amidship. Three speeds forward.

Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.

Bearings: Crankshaft—three large, plain. Camshaft—three, plain. Clutch—spindle, plain. Clutch—thrust, ball. Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball. Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white brass.

Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36x4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type. Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.

Demountable Rims:

Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.

Control: Hand levers on steering wheel and foot accelerator.

Price: \$1,750, f. o. b. Mason City.

Vital Points of Real Superiority

Big and powerful in appearance, real 1911 fore-door body (not 1910 body with fore-doors added), long, straight lines—superior finishing and equipment.

Big power back of the appearance. 40 full horsepower—enough to take you anywhere, over any country, in any weather, without strain to yourself or your car.

Extra long wheelbase—121 inches—insuring the maximum of roominess and easy-riding qualities.

Big wheels with 36-4 inch tires—a further guarantee of easy-riding and reduced cost of maintenance.

Demountable Rims—if you knew what a wonderful convenience these were, you wouldn't consider the ordinary kind on your car.

A price that marks a revolution in car values—\$1750.

These, in addition to marked superiority of design, material and workmanship, take the Colby entirely out of the field of competition, either with other cars of its price, which cannot approach it in quality, or other cars of its quality, which are never sold at its price.

Our 1911 output is limited. We therefore advise an early investigation and reservation of territory.

Watch for us in the Coliseum basement—Booth No. 3—at Chicago from January 28 to February 11.

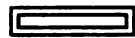
COLBY MOTOR COMPANY, Mason City, Iowa

The Haynes Exhibit at the Garden Show is unique

—partly because of the peculiarly pleasing decorative scheme, but

—principally because of the really unique position which these cars —regardless of their nominal price— have come to occupy among America's finest motor cars.

Most Haynes sales are made to parties who had expected to pay a much higher price but who found all they wanted in the Haynes.



HAYNES AUTOMOBILE CO., Kokomo, Ind.

Licensed under Selden patent.

Space 114

SAMPSON



Crane & Co., Dalton, Mass.—Sampson Truck Loaded with Paper for U. S. Money.



Sampson 1,000 Pound Truck—Express Body Type.



Blacker & Shepherd Co., Boston—Sampson Truck Loaded with 9,000 lbs. of Lumber.



Edgar Sugar House, Detroit—Sampson Truck with 9,000 lb. Load.

The Sampson is a motor truck built by a transportation engineer. He was a man of vast engineering experience. One who had solved many transportation problems.

He was a man of wealth.

He saw ahead the great changes the motor truck would cause in transportation. He saw its economies and possibilities.

It was only natural that he should go to work and endeavor to produce a good motor truck.

The man was Alden Sampson.

He had no prejudices to start with except a prejudice against the way motor trucks were built. Trucks were enlarged, overgrown touring cars, built upon touring car principles.

He said this was wrong. He wanted to build a different kind of a truck.

He studied in detail every American car. He bought many of the best. He took them apart—learned their secrets—saw their faults.

He analyzed foreign trucks. He visited England, Switzerland, France, Germany and Italy. He studied engineering, mechanism and detail—the successes, the failures.

Mr. Sampson then applied himself. He built four trucks. Each embodied his own ideas. Each was an epitome of his own engineering experience. In addition each embodied all of the valuable accepted features of established cars.

But his trucks differed from others. His contained no suggestion of the pleasure car. His were built with commercial conditions alone in mind—heavy loads over rough streets, the constant terrific jar of mechanism 100,000 miles of day after day travel.

His next move was revolutionary. He was determined to prove his own trucks. So he formed a transportation company. Four trucks were operated on a regular schedule. They ran over rough roads from Boston to Lynn, Mass. They delivered goods for nine

Alden Sampson Manufacturing Co.,
Licensed Under Selden Patent Since 1905 **Capital**

PERSON

months. They worked throughout a severe winter. This trial cost him many thousands of dollars.

Of course they developed weaknesses. But this was what he sought. He was glad to pay the price for he believed it was good business. It relieved the purchaser of this burden of expense. He could afford to.

Besides he knew it would return many fold in the end. And care exerted then saved future troubles.

Before he would place the Sampson on the market—before he would sell a single truck—he was determined to gather the experience of other builders whom he admired—men who sought also to build a good truck. He was anxious to know what they had accomplished while he was building his trucks for his own shops.

The French army maneuvers of 1909 offered him the opportunity. He saw there the greatest demonstration of trucks ever held. But he did not find much to add to the Sampson. His visit resulted into a few final touches that satisfied him.

He then sought his market.

Mr. Sampson was four years working on his trucks. He spent \$600,000 in getting the results he sought.

The Sampson trucks he built have made well nigh a perfect record. They are strong, simple, saving. They reflect the care that made them.

Every Sampson truck is distinguished by Sampson characteristics. Every line suggests strength. Every part shows simplicity. Every detail spells economy, reliability, efficiency, thoroughness—perfectly reflecting the spirit of its production.

The Sampson line is a complete line—the most complete line made. It is built in six sizes. There is a size for every need. We are particular on that score—to adapt the size to the work required.

There is the 1000 pound car for quick delivery.

For heavy haul, there is the five-ton. There are four intermediate sizes—a four, three, two and one-ton.

There is also the Sampson Gas-Electric Road Train of from 20 to 40 tons capacity for long haul.

The Sampson is designed to supply every commercial need—to meet every condition.



Sampson 1,000 lb. Truck with Screen Body.



Sampson 5 Ton Truck Carrying 60 Barrels of Flour for T. F. McCabe, Atlanta, Ga.



Jacob Ruppert, New York - Sampson Truck with 11,000 lb. Load.

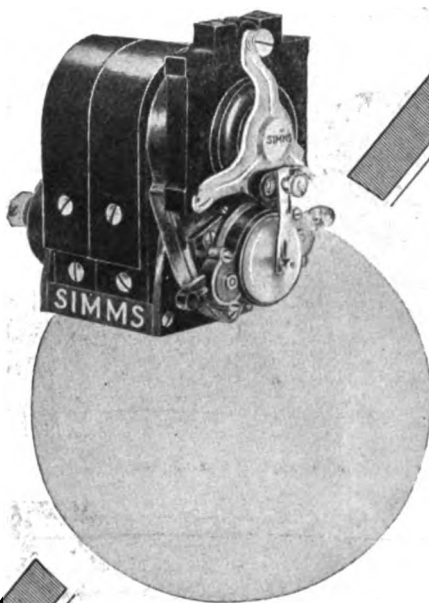


E. Greenfield's Son & Co., New York—Capacity, 3,000 lbs. of Confectionery.

1314 Rhode Island Ave., Detroit, Mich.

\$2,500,000

Factories: Detroit, Mich., Pittsfield, Mass.



SIMMS MAGNETOS

The SIMMS MOTOR STARTER should be on every automobile. See it at the Show.

STARTS the motor from the dash without cranking.
Does away entirely with high tension connections, high tension switch, and separate coil.

ALL the various types of Simms Magnetos for every kind of motor will be shown in full operation at the Madison Square Garden Show, New York.

THE up-to-date line of Simms Magneto accessories—Sparking Plugs, Magneto Covers and Spare Part Cases, Coils, Terminals and Switches—should also be inspected.

THE Simms Exhibit will be most instructive for everyone interested in ignition for automobiles or other purposes.



REMEMBER

New York Show, Madison Square Garden, New York, January 7—21, Space 587.

Chicago Show, January 28—February 11, Stand 127 and 21.

THE SIMMS MAGNETO CO.
1780 BROADWAY, NEW YORK CITY

London Representative :
Simms Magneto Co., Ltd.

Paris Representative:
Cie des Magnetos Simms.

Marion "Thirty"

30 Horsepower
110-inch Wheel Base

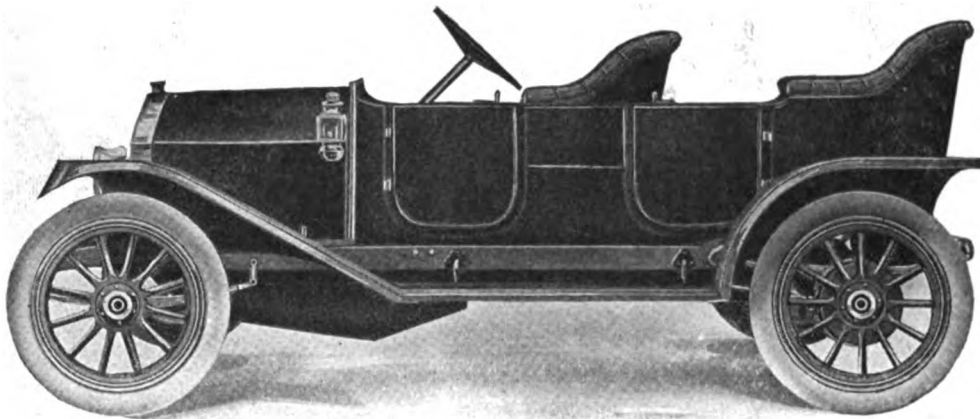
Roadster Style,
\$1,000

Torpedo Roadster,
\$1,050

5-Passenger
Touring, \$1,150

5-Passenger
Fore Doors, \$1,200

Headlights and
Magneto Included



With 30 Horsepower—110-inch Wheel Base—\$1,200.

Marion "Forty"

40 Horsepower
115-inch Wheel Base
Roadster Style, \$1,600

Torpedo Roadster,
\$1,650

4-Passenger Close-
Coupled, \$1,600

5-Passenger
Touring, \$1,650

4-Passenger Coupe,
With Extra Body,
\$2,000

Limousine, \$2,500
Headlights and Bosch
Magneto Included

See the Thousand-Man Car

You will find no other car in the city so interesting as the Marion for 1911.

For these new Marion models which are now on exhibit show all the best ideas of a thousand designers. You can see all the greatest features which this industry has developed in this one composite car.

It is the product of a thousand brains.

All the Best Ideas

Eight years ago we started out to combine in one car all the best ideas that developed.

We had our own designers, our own engineers. Six of the ablest in America have worked on Marion cars. And they invented some features which no other man has excelled.

But their main duty has been to put other men's ideas to a test. They have watched every improvement, every bettered material, every new device. They have compared one with another—in road tests and contests—until they absolutely knew which was best.

These men have smothered their own pride of invention. When any man anywhere devised anything better they bought or adopted that man's idea.

The one idea has always been to have

every feature in the Marion car the very best of its kind in existence.

For eight years we have worked with that one idea. Each important feature has been compared with others over thousands of miles of road. Each has been tested in many national contests. And thousands of Marion owners have helped us make the comparisons.

It is very interesting to see the final result in the Marions for 1911.

The Men Who Helped

We gladly give public credit to the men who have helped us most.

The motor in our "Forty" is the latest Continental creation. The engine in our "Thirty" is made for us by one of our largest competitors. They ask us not to state the name.

These engines—in more than fifty thousand famous cars—have proved themselves the best engines made. No other engines have done so much to build up great reputations.

We use the Kinsey pressed steel frames, the Warner differential, the Warner steering gear. We use the Stutz transmission, the Timken bearings, the Splittorf and Bosch magnetos. And we use the Sheldon springs—the costliest springs made in America.

These things we buy because we have proved them better than anything we can make. We make in our own shops only such parts as we can make better than others.

Cutting the Cost

Every Marion feature—whether we make it or buy it—has been adopted without regard to cost. If we knew anything better at double the price we would get it.

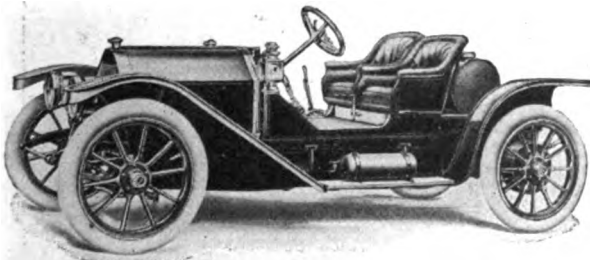
But other men have worked equally well to cut selling cost and overhead expense. We believe there is no other car where so much of the price goes into the making cost.

The 30-horsepower Marions, as a result, sell for \$1,000 to \$1,200. The wheel base is 110 inches. The price includes headlights and magneto.

The Marion "Forty," with 115-inch wheel base, sells for \$1,600 and \$1,650. Compare that with other 40-horsepower cars. The car nearest this "Forty" in style and features is selling for \$2,850.

Come and see these Thousand-Man cars. Let us explain why each device was adopted—how we proved it better than others. If you cannot come, please write for our catalog, showing all the new Marion models.

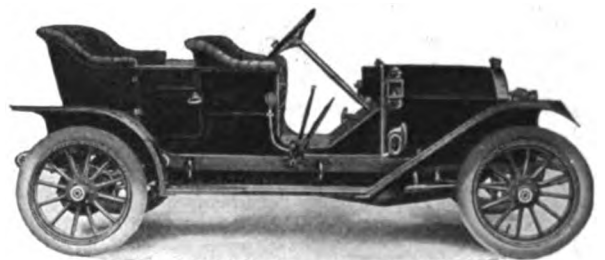
THE MARION SALES COMPANY, Indianapolis, Ind.



With 30 Horsepower—110-inch Wheel Base—\$1,000
With 40 Horsepower—115-inch Wheel Base—\$1,600

Marion

Licensed
Under
Selden
Patent



With 30 Horsepower—110-inch Wheel Base—\$1,150
With 40 Horsepower—115-inch Wheel Base—\$1,650

Will you let us send you this valuable Book FREE

Forty-eight pages, compiled from the most instructive and practical articles written on the subject, boiled down to meaty facts, presented in clear, concise, unmistakable language, so that every automobilist owning this book can know his own ignition system and how to conquer ignition difficulties. Filled to the brim with practical hints. You need this book—send for it now.

Go Over This Partial List of Subjects Treated:

Source of Current Supply.
Batteries.
Induction.
Magnetos, High and Low Tension.
How to Adjust Vibrating Coils.
Changing Time Spark.

Wiring, Timers.
Practical Electrical Units and Standards.
How to Locate Ignition Troubles.
Action and Purpose of "Condensers;" How to Make Adjustments.

Fill
in
and

Magneto Type
at \$1.25

Regular Type
at \$1.00

Sold by leading jobbers, dealers in automobile accessories everywhere. If your dealer can't supply you, order direct from factory; shipped to you prepaid at the prices quoted.

Mail
this
Coupon

JEFFERY-DEWITT CO.,
65 Butler Ave., Detroit.
Send me "Ignition and Spark Plug Talk."

Name

Address

.....

.....

Reliance

(REG. U.S. PAT. OFF.)

SPARK PLUGS

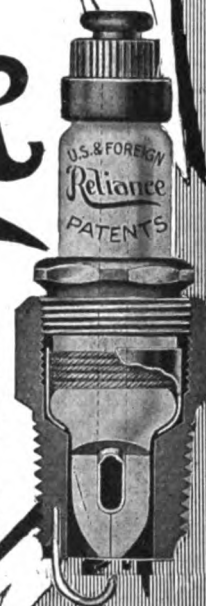
produce a more intense spark and use less battery power than any other plug. Are absolutely soot proof, and carbon proof, and do not require cleaning because they are proof against any and every combination we have been able to find in a gasoline engine cylinder. Are absolutely infallible when short circuit matter is encountered.

RELIANCE MAGNETO SPARK PLUGS cannot foul even when an excess amount of oil is used. Equip your engine with Reliance plugs and you'll do away with spark plug troubles.

JEFFERY-DEWITT CO.

Makers of
Reliable Spark Plugs
65 Butler Ave., Detroit, Mich.

ARMAND FREY & CO.,
Berlin, Germany,
Agents for
Continental
Europe.



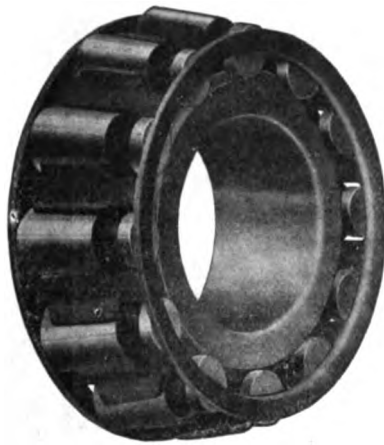
PROMINENT MOTOR CAR BUILDERS

USING

Timken Roller Bearings

IN PART OR THROUGHOUT ON

THEIR 1911 MODELS



Pleasure Cars

Apperson Bros. Automobile Co.
 Atlas Motor Car Co.
 Autocar Co., The
 Abbott Motor Car Co.
 Bartholomew Co., The
 B. C. K. Motor Co.
 Babcock Co., H. H.
 Cadillac Motor Car Co.
 Chalmers Motor Co.
 Columbia Motor Car Co.
 Croxton-Keeton Motor Co., The
 Crawford Automobile Co.
 Columbus Buggy Co., The
 Coates-Goshen Automobile Co.
 Canada Cycle & Motor Co., Ltd.
 Carhart Auto. Corporation
 Cunningham, Son & Co., James
 Chautauqua Motor Co.
 Case Motor Car Co.
 Dayton Motor Car Co., The
 Dorris Motor Car Co.
 Durocar Mfg. Co., The
 E-M-F Co., The
 Franklin Mfg. Co., H. H.
 Grout Automobile Co.
 Great Western Automobile Co.
 Haynes Automobile Co., The
 Hupp Motor Car Co.
 Haberer & Co.
 Herreshoff Motor Co.
 International Harvester Co.
 Jenkins Motor Car Co., The
 Kissel Motor Car Co., The
 Knox Automobile Co.

Locomobile Co. of America, The
 Lexington Motor Car Co., The
 Marion Motor Car Co., The
 Maxwell-Briscoe Motor Co.
 Metzger Motor Car Co.
 Mercer Automobile Co., The
 McIntyre Co., W. H.
 Maytag-Mason Motor Co.
 Moyer, H. A.
 Moline Automobile Co.
 Midland Motor Co.
 Moon Motor Car Co.
 Matheson Motor Car Co.
 National Motor Vehicle Co.
 Nordyke & Marmon Co.
 New York Taxicab Co.
 Olds Motor Works
 Owen Motor Car Co.
 Packard Motor Car Co.
 Peerless Motor Car Co., The
 Pierce-Arrow Motor Car Co., The
 Pope Mfg. Co.
 Premier Motor Mfg. Co.
 Palmer & Singer Mfg. Co.
 Pullman Motor Car Co.
 Reo Motor Car Co.
 Royal Tourist Car Co., The
 Stearns Co., The F. B.
 Stevens-Duryea Co.
 Speedwell Motor Car Co., The
 Simplex Automobile Co.
 Selden Motor Vehicle Co.
 Smith Automobile Co.
 Simplex Motor Car Co.
 Stafford Motor Car Co.

Spoerers Sons Co., Carl
 Sinclair-Scott Co.
 Sears Motor Car Works
 Schacht Motor Car Co.
 Thomas Motor Co., E. R.
 Terminal Taxicab Co. (of Wash-
 ington, D. C.)
 Velie Motor Vehicle Co.
 Winton Motor Carriage Co.,
 The
 Westcott Motor Car Co.
 Wilcox Motor Car Co., H. E.
 Willys-Overland Co., The

Electrics (Pleasure)

Anderson Carriage Co., The
 Babcock Electric Carriage Co.
 Columbus Buggy Co., The
 Kimball & Co., C. P.
 Rauch & Lang Carriage Co.,
 The
 Waverly Co., The

Commercial Cars

American Locomotive Co.
 American Motor Truck Co.
 Atterbury Motor Car Co., The
 Abendroth & Root Mfg. Co.
 Auto Car Co., The
 American La France Fire Eng.
 Co.
 Bartholomew Co., The
 Commercial Truck Co. of Amer-
 ica
 Cass Motor Truck Co.

Franklin Mfg. Co., H. H.
 Grabowsky Power Wagon Co.
 Gramm Motor Car Co., The
 General Vehicle Co.
 Garford Motor Truck Works
 Hart Kraft Motor Co.
 Harrison Co., The Robert
 Kelly Motor Truck Co., The
 Knox Automobile Co.
 Kopp & Co.
 Kissel Motor Car Co.
 Mack Bros. Motor Car Co.
 Metzger Motor Car Co.
 Morgan Co., R. L.
 Oliver Motor Car Co.
 Packard Motor Car Co.
 Pierce-Arrow Motor Car Co.,
 The
 Pope Mfg. Co.
 Packers Motor Truck Co.
 Pennsylvania R. R. Co., The
 Rapid Motor Vehicle Co.
 Reliance Motor Truck Co.
 Randolph Motor Car Co.
 Reliable Auto Truck Co.
 Robinson-Loomis Motor Car
 Co.
 Sampson Mfg. Co., Alden
 Schurmeir Wagon Co.
 Seagrave Co., The
 Sternberg Mfg. Co.
 Schacht Motor Car Co.
 Victor Motor Truck Co.
 Wilcox Motor Car Co., H. E.

Manufacturers Using Timken Bearings in Transmissions on 1911 Models

Apperson Bros. Automobile Co.
 Atlas Motor Car Co.
 Babcock Co., H. H.
 Cunningham, Sons & Co., James
 Case Motor Car Co.
 Dayton Motor Car Co., The
 Dorris Motor Car Co.
 Gramm Motor Car Co.

Great Western Automobile Co.
 Haynes Automobile Co., The
 Imperial Automobile Co.
 Knox Automobile Co.
 Mercer Automobile Co., The
 Moline Automobile Co.
 Midland Motor Co.
 Olds Motor Works

Rapid Motor Vehicle Co.
 Reliance Motor Truck Co.
 Schurmeir Wagon Co.
 Selden Motor Vehicle Co.
 Speedwell Motor Car Co., The
 Schacht Motor Car Co.
 Velie Motor Vehicle Co.
 Westcott Motor Car Co.
 Wilcox Motor Car Co., H. E.

Transmission Builders

Auto. Parts Mfg. Co.
 Brown-Lipe Gear Co.
 Brownell Motor Co., F. A.
 Model Gas Engine Works
 Superior Machine Tool Co.
 Warner Gear Co.
 Warner Mfg. Co.
 Wabash Gear Works

Axle Makers

Timken-Detroit Axle Co. use Timken Roller Bearings exclusively

TIMKEN ROLLER BEARING CO., Canton, Ohio

MR. DEALER, Have You Written Us For That "Co-operative Proposition" Yet?

It just amounts to this:

That we print your circulars (or "Flyers") free of charge, in return for your efforts in selling a small number of SIRENO horns. The Flyers are 11 by 18 inches, coated paper, and weigh about 3-4 of 1 ounce, ready for mailing.

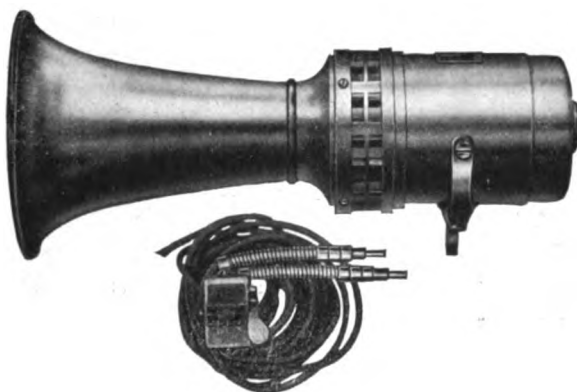
In reality, the Flyers will sell the horns, too, for we reserve part of the space—about a fifth—for SIRENOS. Our object is to introduce SIRENOS to your territory, for we know that, when a few have been sold, many more will follow.

You can sell SIRENOS to scores of your customers who will not consider the other long-range horns on the market. The tone of the

SIRENO is not offensive, and its user does not feel the need of a mental apology every time he blows it. Yet it has a powerful, penetrating, long-range note that warns effectively as far as is required for safety at any speed.

Besides its long-range qualities, the SIRENO is equally appropriate for short-range signalling, because its tone can be modulated from nothing to the maximum by manipulating the push-button. This is true of no other electric signal.

SIRENOS are made in five styles and sizes, to suit any size and type of car. Their construction is absolutely first-class, and they are a credit to any car.



SIRENO with Long Projector



Write TODAY for our folder, "A Co-operative Proposition" and dummy of the "Flyer."



SIRENO Display and Demonstrating Stand

See us at Madison Square Garden Show, Space No. 317

Sound Advice to Dealers

The ONLY Tire Guaranteed for 5,000 Miles or 200 Days' Service. The ONLY Guarantee Assured by a Signed Contract

AJAX TIRES

**Backed by the signature and confidence of its makers
for 1,500 miles more than any other**

**STILL
RUNNING**

Compare the Ajax 5,000 Mile Guarantee with the 3,500 mile promise that goes with the next best tire; then ask yourself whether you are justified in continuing to lose mileage money!

For a complete set of our tires your guaranteed mileage can thus be increased by 6,000 miles and tire costs brought down to a reasonable, definite basis, effecting a great saving in the operation of any car.

Remember this: The Ajax 5,000 Mile Guarantee has been in operation four years. The fact that it is a fixed and exclusive selling policy with us is proof that Ajax Tires must be superior in quality and workmanship in order to give greater mileage.

*See our
Exhibit at
Garden Show,
New York, and
licensed shows in
Chicago and Boston.*

Ajax Tires are made in plain tread and Extra-Heavy Non-Skid; the latter the only non-skid guaranteed for 5,000 miles and the only one which, in addition to superior non-skidding qualities, is also practically puncture-proof.

Valuable Booklet FREE—

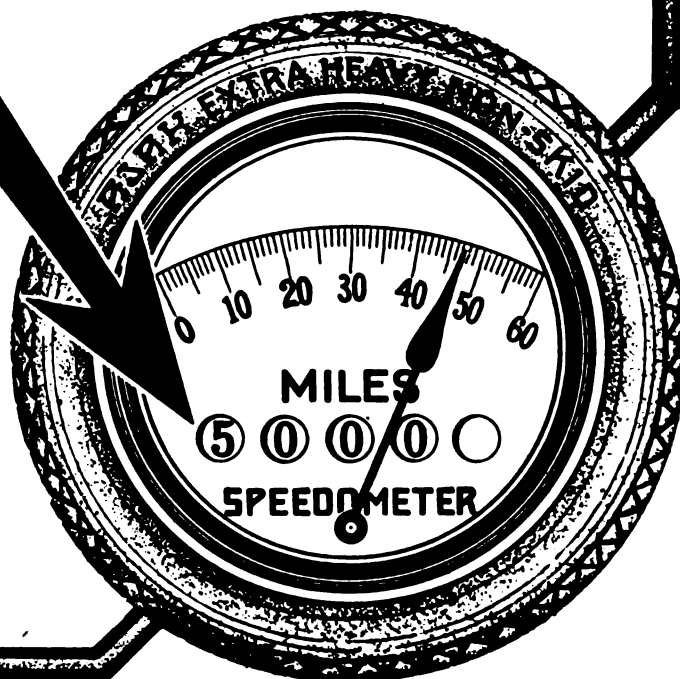
**"Common Sense Lessons in the
Care and Preservation of Tires"—
is full of information that every motorist
should obtain. Write for it now.**

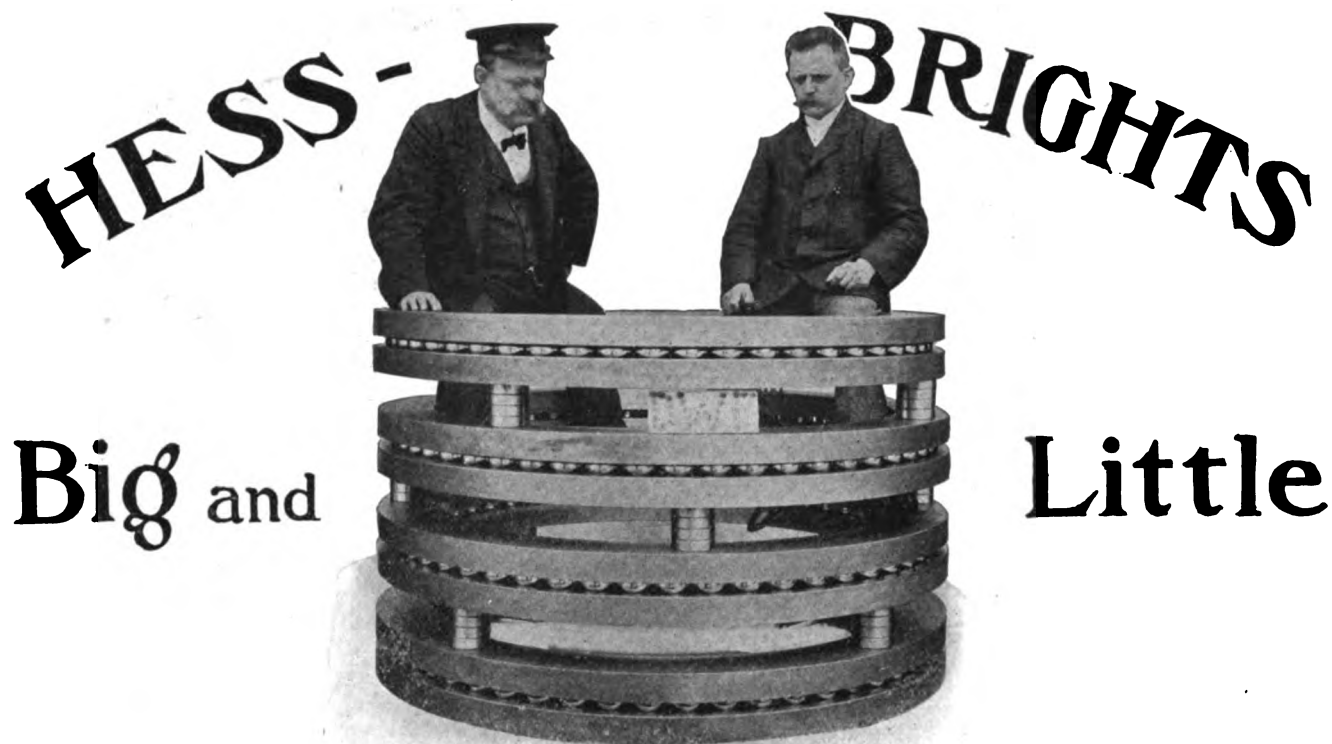
Ajax-Grieb Rubber Company

Dept. N, 1796 Broadway, New York

FACTORIES: Trenton, N. J.

Branches in principal cities.





Recently we showed a pile of pretty big HESS-BRIGHT radial bearings, used by Krupp to support the journals of 2-ton revolving drums.

Above is a photograph of some still bigger Hess-Bright bearings—for end thrust, this time. They are 1140 millimetres ($44\frac{1}{2}$ inches) inside diameter; 1400 outside ($55\frac{3}{8}$ inches); and $5\frac{3}{4}$ inches high, with $2\frac{7}{8}$ inch balls. They are suitable for carrying vertical hydraulic turbine wheels of high power, for steamship propeller shaft thrusts, and for similar duty where tremendous end loads have to be sustained at medium to high rotative speeds.

The letters "DWF" on the card are made up of small Hess-Bright radial bearings, each having 6 balls.

The spacers between the big bearings are larger Hess-Bright radials, piled 4 high.

The HB-DWF factories turn out ball bearings of all these sizes and everything between—and even larger bearings if required, with balls up to 4 inches in diameter.

We can't show you bearings quite so large as these big fellows at the Madison Square Garden Show, but we can show you the balls, together with a lot of other things worth your while to see.

Call on us—and remember that HESS-BRIGHT means PROMPT DELIVERIES as well as the best in quality.

LOCAL DISTRIBUTORS FOR RETAIL TRADE ONLY
New York, N. Y., The Hess-Bright Company, 1974 Broadway.
Chicago, Ill., The Hess-Bright Company, 1800 Michigan Ave.

The more frequently used bearing sizes are also carried in stock by
THE POST & LESTER CO.,
Boston, Mass., and Hartford, Conn.
CHANSLOR & LYON MOTOR SUPPLY CO.,
San Francisco, Los Angeles and Fresno, California; Seattle and Spokane, Washington.

THE HESS-BRIGHT MANUFACTURING CO. 2109 Fairmount Avenue
PHILADELPHIA, PA.

McCORD Products

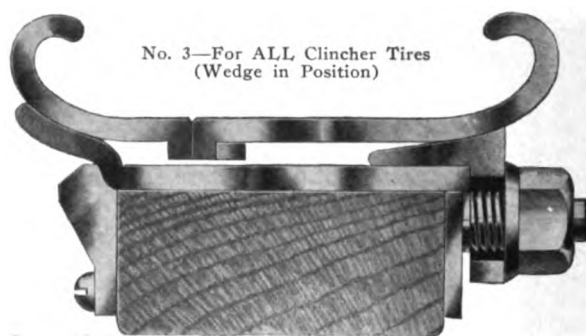
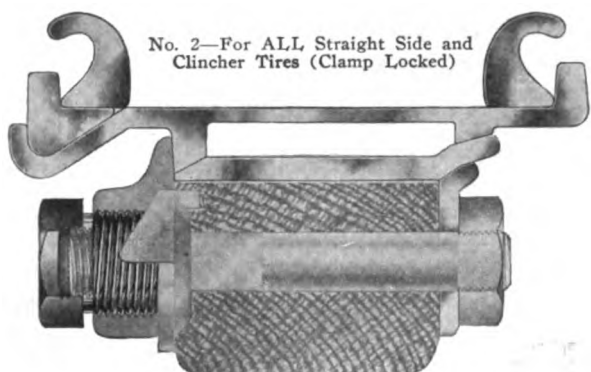
have always been highly regarded by the automobile world but today with our new factory and wonderful organization they are recognized as leaders.

There is hardly an American motor car that doesn't carry something from our factory.

McCord Mfg. Co.
DETROIT

RADIATORS, FANS, LUBRICATORS, PUMPS, McKIM GASKETS AND OTHER SPECIALTIES

*See our exhibit at the
New York and Chicago Shows.*



STANDARDIZATION OF RIMS

that benefits

CAR BUILDERS—TIRE MAKERS—CAR OWNERS

The Standard Universal Quick Detachable Demountable Rims

"FIT ALL TIRES"

and

Solve the Problem of Interchangeability

25,000 sets of Demountable Rims and 135,000 sets of Quick Detachable Rims, practically 90 per cent. of the total number of Rims made in the United States, have been contracted for by the following manufacturers:

Acme Motor Car Co., The
American Locomotive Co.
American Motor Car Co.
Anderson Carriage Co.
Argo Electric Vehicle Co.
Ashland Auto Co.
Atlas Motor Car Co.
Atwood Auto Co.
Auburn Auto Co.
Austin Auto Co.
Auto Car Co.
Badger Motor Car Co.
Baker Motor Vehicle Co.
Bartholomew Co., The
Bergdoll, L. J., Motor Co.
Borbein Auto Co.
Broc Electric Carriage Co.
Buick Motor Co.
Burg, The L., Carriage Co.
Cadillac Motor Car Co.

Canada Cycle & Motor Co.
Carhartt Auto Corp.
Chalmers Motor Co.
Columbia Motor Car Co.
Cook Auto & Carriage Co.
Corbin Motor Vehicle Corp.
Cunningham, Jas. Son & Co.
Davis, Geo. W., Carriage Co.
Dayton Motor Car Co.
Dietrich Motor Car Co.
E-M-F Co.
Ellis Motor Car Co.
Elmore Mfg. Co.
Fiat Auto Co.
Franklin, H. H., Mfg. Co.
G & J Tire Co.
Gabriel Auto Co.
Garford Co., The
Gramm Motor Car Co.
Great Southern Auto Co.

Grout Auto Co.
Hartford Rubber Works Co.
Hayes Wheel Co.
Hol Tan Co.
Hudson Motor Car Co.
Imperial Wheel Co.
International Harvester Co.
Inter-State Auto Co.
Jeffery, Thos. B., Co.
Johnson Service Co.
Kissel Motor Car Co.
Lexington Motor Car Co.
Locomobile Co.
Lozier Motor Car Co.
Louverne Auto Co.
McFarlan Motor Car Co.
McLaughlin Motor Car Co.
Mann-Aldrich Carriage Co.
Marion Motor Co.
Maxwell-Briscoe Motor Co.

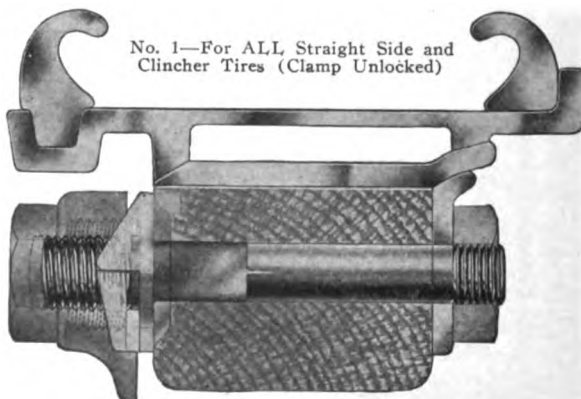
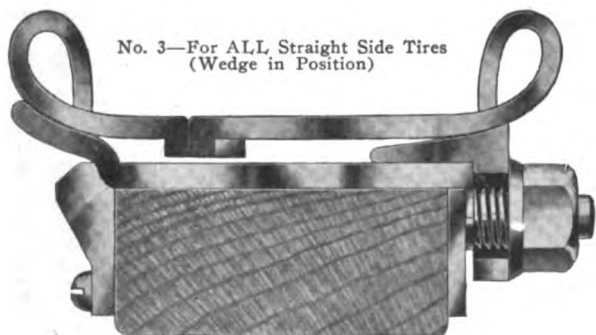
Michigan Buggy Co.
Middleby Auto Co.
Mitchell-Lewis Motor Co.
Moline Auto Co.
Moon Motor Car Co.
Moyer, H. A.
Morgan & Wright
National Motor Vehicle Co.
Nordyke & Marmon Co.
Oakland Motor Car Co.
Olds Motor Works
Overholt Co.
Packard Motor Car Co.
Paterson, W. A., & Co.
Peerless Motor Car Co.
Pierce-Arrow Motor Car Co.
Pence Auto Co.
Pope Mfg. Co.
Premier Motor Mfg. Co.
Prudden & Co.

Pullman Motor Car Co.
Rauch & Lang Carriage Co.
Richmond Iron Works Corp.
Schacht Motor Co.
Selden Motor Vehicle Co.
Simplex Auto Co.
Stanley Motor Carriage Co.
Stearns, F. B., Co.
Stevens-Duryea Co.
Streator Motor Car Co.
Studebaker Auto Co.
Thomas, The E. R., Motor Co.
Traveller Auto Co.
Velie Motor Vehicle Co.
Waverley Co., The
Westcott Motor Car Co.
White Co., The
Willis-Overland Co.
Winton Motor Carriage Co.

Write for illustrated
descriptive matter.

**The
United Rim
Company**
AKRON, OHIO

**8 DEMONSTRATIONS
BOTH SHOWS**

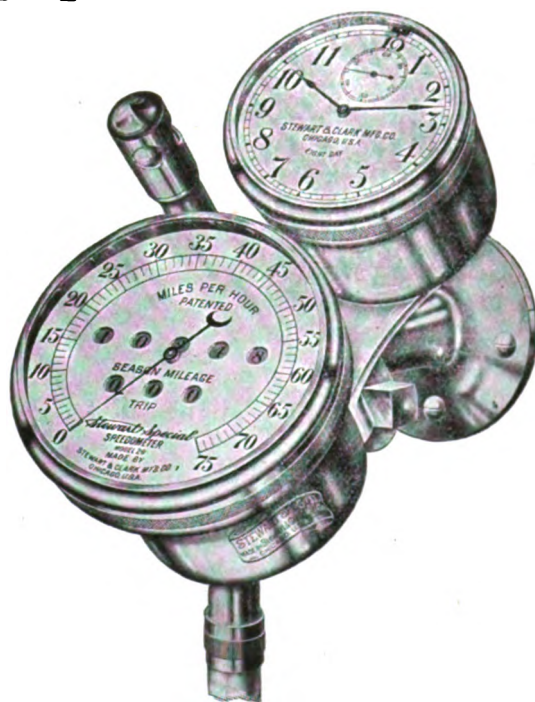


ALWAYS ON THE JOB

A certain speedometer manufacturer who has styled his product the "Aristocrat of Speedometers"? advertises that three car manufacturers use his speedometer as standard equipment.

Thirty-four
car manufacturers
use the popular
Stewart, "the people's
speedometer," as
standard equipment.

Adopted after a severe test in competition with all other makes. Stewart Speedometers are always best by every test. Five times as many in use as all other makes combined.



Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years

Stewart & Clark Manufacturing Company

1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
New York: 1878 Broadway
Chicago: 1312 Michigan Avenue

San Francisco: 307 Golden Gate Avenue
Los Angeles: 1212 South Main Street
Philadelphia: 608-10 North Broad Street



WE have completed our annual arrangements for increase of business. Our equipment in all departments is very complete. We will exhibit our

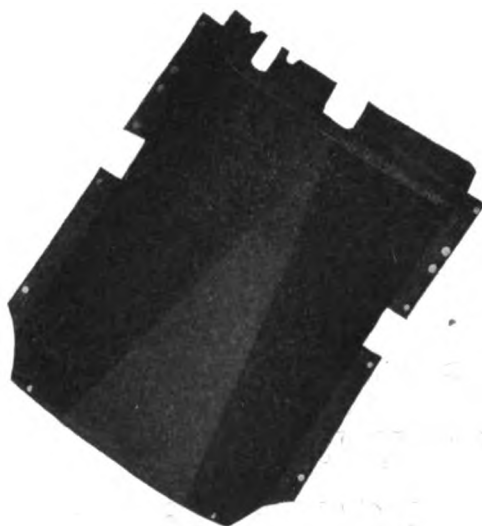
**New Channeled Steel Fender Stiffener
and the Hayes-Stanwood Running Board**

Metal Bodies

Fenders

Gasoline Tanks

Hoods



Engine Pans

**Running Board
Shields**

**Forged Irons
Tool Boxes**

and a FULL LINE OF SHEET METAL PARTS at the New York and Chicago Shows. Don't miss seeing them.



**HAYES
M'F'G
CO.**

**Detroit,
Mich.**





BRISCOE PRODUCTS

RADIATORS
HOODS
FENDERS

TANKS
DASHES
MUFFLERS

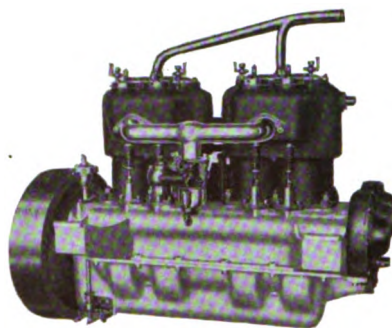
TUBE BENDING
SHEET METAL PARTS
STAMPINGS

DIES
GALVANIZING
ENAMELING

Let us make you a proposition on your next lot of SHEET METAL PARTS. We can interest you.

BRISCOE MANUFACTURING COMPANY, Detroit, Mich.

These new motors will make their first appearance at the Chicago Automobile Show, Space 65.

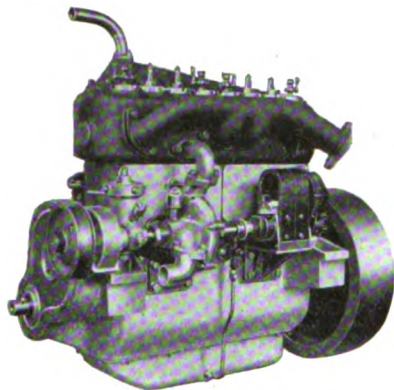


Model "T"

Cylinders $5 \times 5\frac{1}{4}$ inches. Cast in pairs. "T" head type with main frame construction. Special automatic oiling system, liberal bearings, large valves and other notable features.

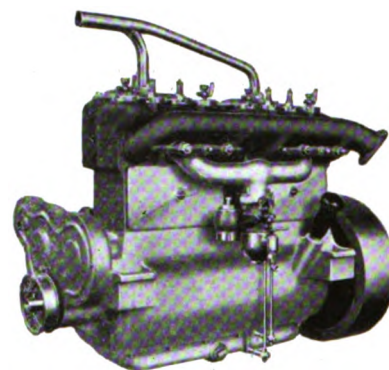
This model of motor will be furnished $5\frac{1}{4} \times 5\frac{1}{4}$ size.

The up-to-date features and attractive prices are sure to interest the most critical manufacturers.



Model "O"

Cylinders $4\frac{1}{8} \times 5\frac{1}{4}$ inches, cast en bloc. "L" head type, furnished in main and subframe construction. Also supplied in complete unit power plant, using multiple disc clutch and selective type transmission. This motor will also be supplied in $3\frac{3}{4} \times 5\frac{1}{4}$ inch size.



Model "E"

Cylinders $4\frac{1}{2} \times 5\frac{1}{2}$ inches, cast in pairs. "L" head type, supplied in both main and subframe construction. This motor can be had in complete unit power plant, using multiple disc clutch and three speed selective type transmission.

1912
Standard

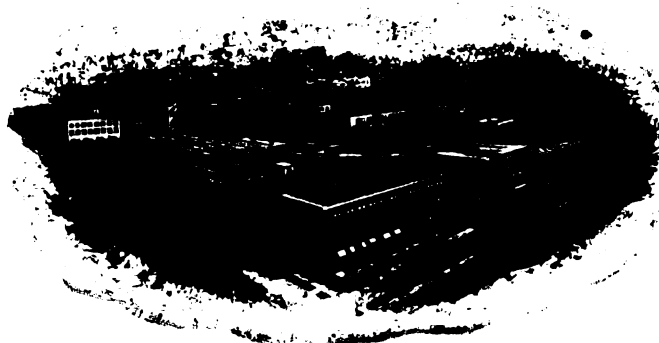
CONTINENTAL MOTORS

The superiority of the CONTINENTAL product has been generally recognized for many years past and the progressive pleasure and commercial vehicle manufacturers cannot afford to overlook the many approved of features found in these new models. Blue prints and full particulars will be sent upon request.

Continental Motor Manufacturing Co.
MUSKEGON, MICHIGAN

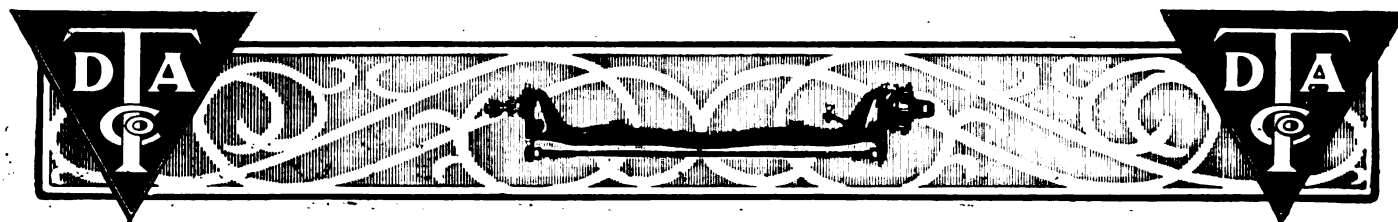
**Contract Now
for Your 1912
Requirements.**

Factory Representative
K. F. PETERSON
150 Michigan Ave.
CHICAGO, ILLINOIS



Sample motors will be shown at the Chicago Automobile Show only, Space 65, Coliseum Gallery.

Factory Representative
L. D. BOLTON
1610 Ford Building
DETROIT, MICHIGAN



IT is worth noting that those manufacturers who have been most conspicuously successful are the builders of **QUALITY** cars.

The following users of Timken-Detroit Products speaks convincingly of Timken-Detroit **QUALITY**. Could there be any more conclusive array of live testimony?

PLEASURE CARS

Peerless Motor Car Co.
F. B. Stearns Co.
Chalmers Motor Co.
E. R. Thomas Motor Co.
Matheson Motor Car Co.
Lozier Motor Co.
National Motor Vehicle Co.
Cadillac Motor Car Co.
Haynes Automobile Co.
Knox Automobile Co.
Speedwell Motor Car Co.
Velie Motor Vehicle Co.
Pullman Motor Car Co.
Dorris Motor Car Co.
Owen Motor Car Co.
Stafford Motor Car Co.
Moon Motor Car Co.
Autocar Co.

Westcott Motor Car Co.
Croxtton-Keeton Motor Co.
Lexington Motor Car Co.
Herreshoff Motor Co.
Maytag-Mason Automobile Co.
Grout Automobile Co.
H. E. Wilcox Motor Car Co.
Jenkins Motor Car Co.
Durocar Mfg. Co.
Carhartt Automobile Corp.
Jas. Cunningham, Son & Co.
Haberer & Co.
Silent Sioux Mfg. Co.
Midland Motor Car Co.
Canada Cycle and Motor Co.
Ricketts Automobile Co.
Richmond Iron Works Corp.
(The Virginian).

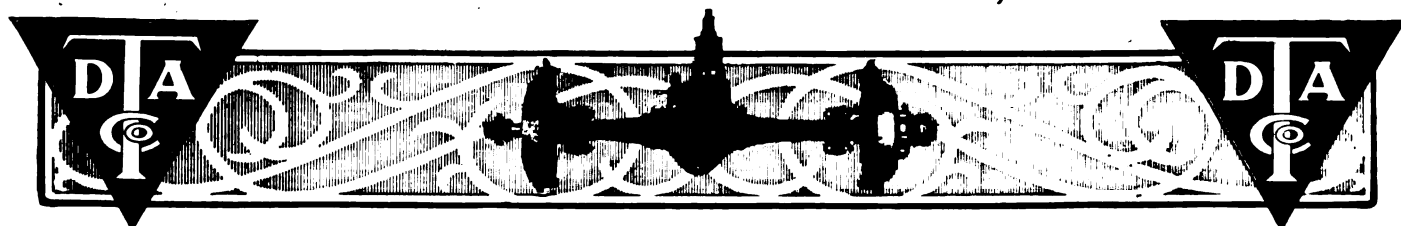
COMMERCIAL MOTOR CARS

Rapid Motor Vehicle Co.
Reliance Motor Truck Co.
American La France Fire Engine Co.
Kelly Motor Truck Co.
American Motor Truck Co.
Knox Automobile Co.
Baker Motor Vehicle Co.
Garford Co.
Pope Mfg. Co., West Works.
C. P. Kimball & Co.
H. E. Wilcox Motor Car Co.
Seagrave Co.
Commercial Truck Co.
Mack Bros. Motor Car Co.
Pennsylvania R. R. Co.

Peru Auto Co.
Durocar Mfg. Co.
B. C. K. Motor Co.
Schurmeier Wagon Co.
Robert E. Harrison & Co.
Abendroth & Root Mfg. Co.
Victor Motor Truck Co.
Robinson Loomis Motor Truck Co.
Alden-Sampson Co.
Speedwell Motor Car Co.
F. B. Stearns Co.
Schacht Mfg. Co.
U. S. Carriage Co.
Courier Motor Car Co.

Timken-Detroit Axles DO make a car more marketable. Suppose you investigate.

THE TIMKEN-DETROIT AXLE CO., Detroit



The Largest Automobile



THE CELEBRATED Brampton Chain

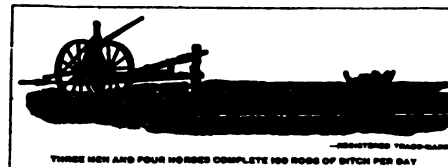
is the Strongest Chain in the World

Price the Same as Other Chains

THE Brampton Chain

is not only used on Motor Cars, Motorcycles, Bicycles and Aeroplanes, but also on Machinery of all kinds.

**All Standard Sizes
in Stock.**



THREE MEN AND FOUR HORSES COMPLETE 100 RODS OF DITCH PER DAY
—Brampton Roller Chain—
ALL SUBSIDIES FREE WHERE WE DO THE TILING. A P.P.S. INVESTMENT IN TILE PAYS 100 P.C. BY ANNUAL TEST

H. M. FISK,
Solicitor and Contractor
For Tile Draining.

Manufacturer of The Only Successful Rapid Tile Laying Machine in

PELLA, IOWA. Dec. 10/10/191...

Chas. E. Miller, 121 Chambers Street N.Y.

Dear Sir,

I have your letter of 20th inst., stating you had shipped 3 1/2 pitch, Brampton Roller Chain. You ask what we use said chain for. I send you two Photos of Machine upon which we use said chain.

Drum 22 inches diameter, Sprocket 39 inch diameter, draft 57 tons, at highest tension, the chain has run three summers without perceptible wear, and we think it a dandy.

Yours very truly,

H.M.Fisk.

We are the Sole American Agents. Catalog on request.

CHAS. E. MILLER, Manufacturer, Jobber
Exporter and Importer

Philadelphia, Pa.

Boston, Mass.

Brooklyn, N. Y.

Cleveland, O.

Hartford, Conn.

Springfield, Mass.

Supply House in America



Saves Power

Saves Wear



Saves Time

Saves Money



Miller's Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Miller Pan-American Gear Case Compound

Made in Three Densities—Light, Medium, Heavy

All have a low cold test and high melting points and retain their various consistencies at varying temperatures.

In order to convince you of the efficiency of these lubricants we are willing to make you a SPECIAL PRICE for an initial order, much lower than usually quoted on other high-grade oils and greases.

AGENTS WANTED IN UNOCCUPIED TERRITORY.

HOME OFFICE

**97-99-101 Reade Street
and 121 Chambers Street**

New York City

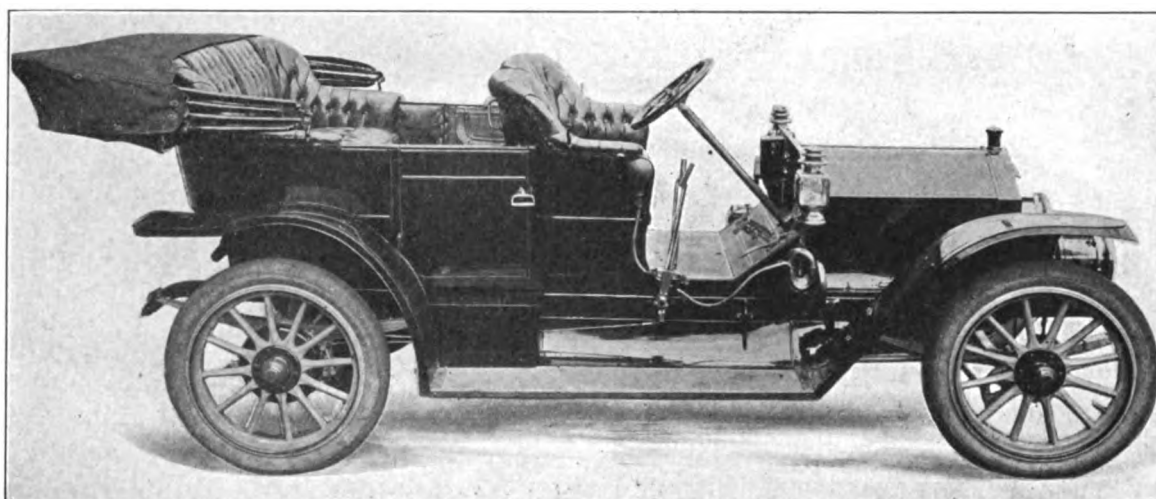
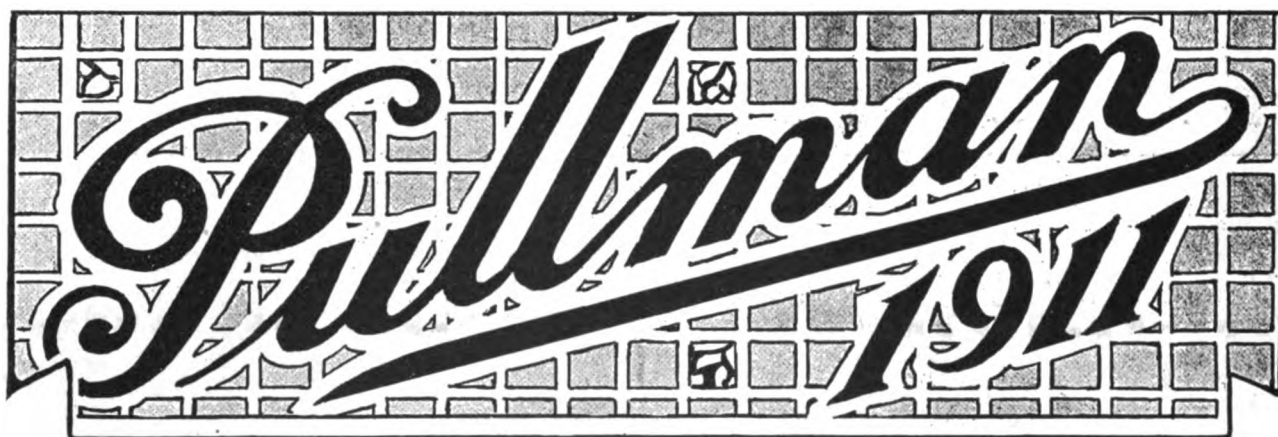
Detroit, Mich.

Buffalo, N. Y.

Atlanta, Ga.

New Orleans, La.

54th St. and Eighth Ave., New York City.



Unexcelled Intrinsic Values Unexcelled Wearing Qualities

NINE MODELS, \$1650 TO \$4000; 30 TO 50 HORSEPOWER

PULLMAN POPULARITY is due to the fact that the car is built on the principle that use is the best test. We can show you cars that have gone 90,000 miles and are still going. Their performances prove their perfection. The aim of the Pullman Company since its inception has been not to introduce radical and revolutionizing ideas but to build the best automobile possible. It has striven to not only keep abreast of the times but to so equip and manage its entire organization that Pullman automobiles could be manufactured and sold more advantageously than any other car.

Our complete line will be on exhibition at the Madison Square Garden and Coliseum Shows. Many Pullman agents will be there whom you should know. They who sell our cars are best qualified to speak of the agency proposition.

We want RESPONSIBLE, ESTABLISHED, PROGRESSIVE DEALERS to represent us in UN-ALLOTTED TERRITORY, particularly in the following cities—Pittsburg, Pa.; Cincinnati, O.; Louisville, Ky.; Memphis, Tenn.; Indianapolis, Ind.; Detroit, Mich.; Des Moines, Iowa; Omaha, Neb.; Denver, Colo.; Milwaukee, Wis.; and in many points throughout Texas and the Southwest.

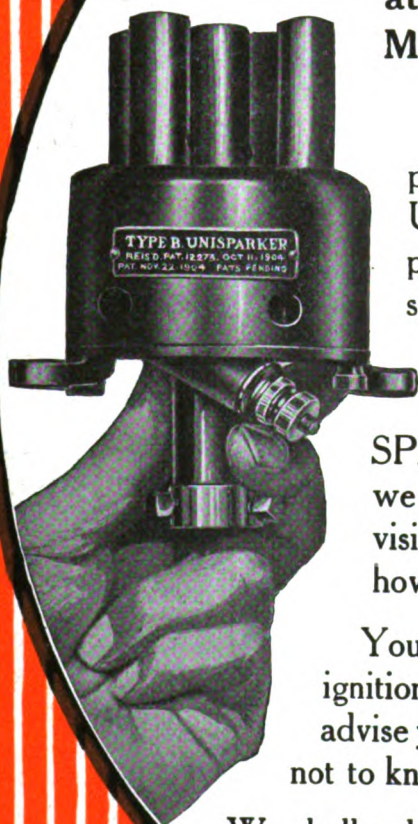
PULLMAN MOTOR CAR COMPANY, Drawer W, York, Pa.

Licensed under Selden patent.

UNISPARKER

Dealers and Repair Men

are invited to examine the UNISPARKER
at our Space, No. 281, Balcony,
Madison Square Garden Show.



We have said much about the simplicity and unfailing regularity of the UNISPARKER'S action. Its remarkable performance is due largely to its positive single spark contact, which eliminates the magnetic trembler.

Though easy to understand, the UNISPARKER is less easy to describe. Therefore we invite shop and garage men especially to visit us at the Shows and see for themselves just how it works and why it does what we claim.

You are frequently asked for advice regarding ignition equipment. It is to your interest to advise your customers well. You cannot afford not to know the UNISPARKER. COME!

We shall exhibit at the Chicago and Boston Shows, as well as at New York. See us there, if you do not come to New York.

ATWATER KENT MFG. WORKS
PHILADELPHIA., PA.

THE MOTOR WORLD

FEDDERS RADIATORS

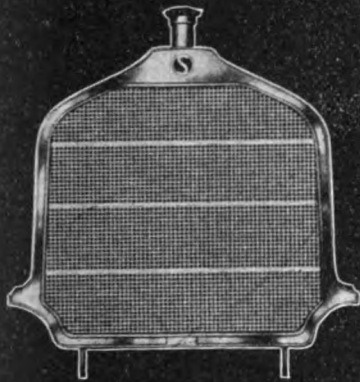
Are now being made in our large new factory illustrated here.

We have increased
our capacity over
100% and want
your business.

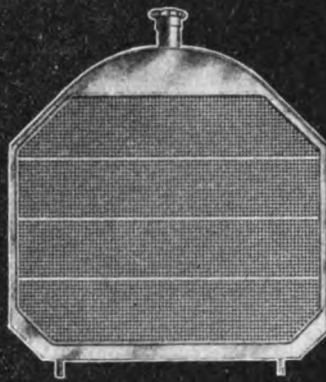


Remember that
the Fedders is
the only Real Square
Tube radiator.

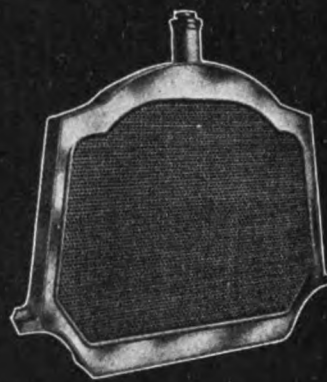
A few of our 1911 customers.



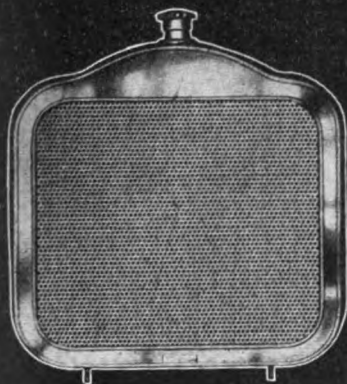
SELDEN



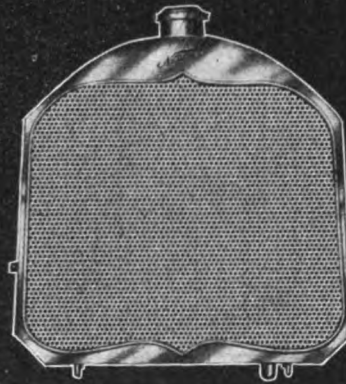
PIERCE



PACKARD



WHITE



NATIONAL



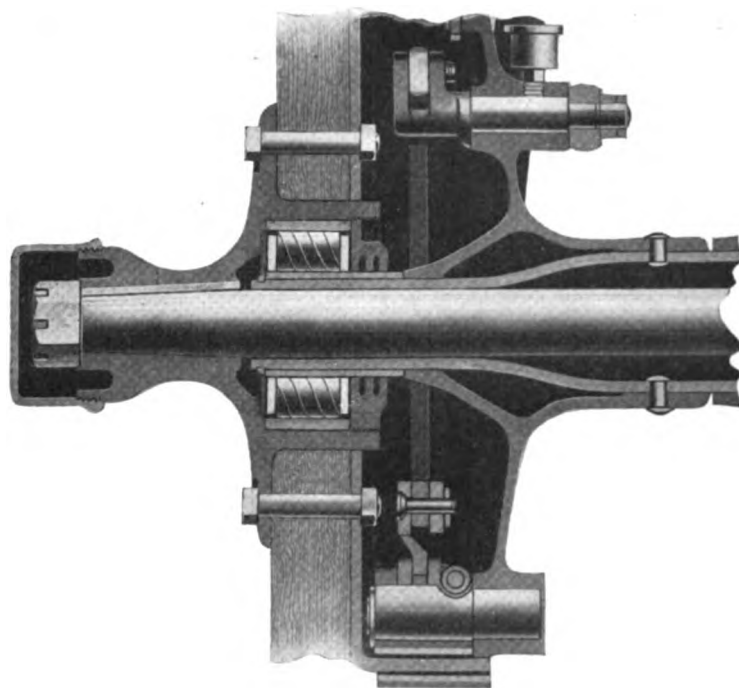
WINTON

Our new 1911 Catalogue is ready and we would like to send
you a copy. It is interesting and a postal will bring it to you.

FEDDERS MANUFACTURING WORKS

57 - 65 TONAWANDA STREET,
BUFFALO, N.Y.

Hyatt Roller Bearings



THE Responsibility for the use of proper material in motor car construction, rests with the engineer and his ability to determine its quality. This is especially true of those parts subject to excessive strain or wear.

In adopting the Hyatt Roller Bearing, uncertainty is eliminated by the standardization of all materials under the supervision of a competent metallurgist, who has at his command fully equipped physical and chemical laboratories.

Samples are systematically taken from each lot of incoming material and carefully tested before acceptance. A complete set of records is made for reference and study. All heat treating is under the same scientific supervision, nothing is left to chance.

This care in determining proper standards, and their maintenance, when once established, together with a constant study of results, means not only protection to the car builder but continual improvement in quality.

Hyatt Roller Bearing Co.

Detroit, Michigan

The Manufacturer's Responsibility to His Customers

Today with the automobile business settling down to a firm basis it is interesting to note that the concerns who have been most stable, and for whose product there has been unceasing demand are those concerns who have not followed fads, but have gone on year after year building their cars as best they knew how, that every customer might be satisfied, and receive full value for the money he had spent.

Now the manufacturer faces a new public, a better educated public, whose demands are becoming more reasonable and sane every day, and at the same time their demands are more inflexible. They demand that no matter what the price of the car, certain accessories must be of the highest type. This is particularly true of ignition, and the manufacturer who provide

DELCO

An Ignition Known to be Dependable

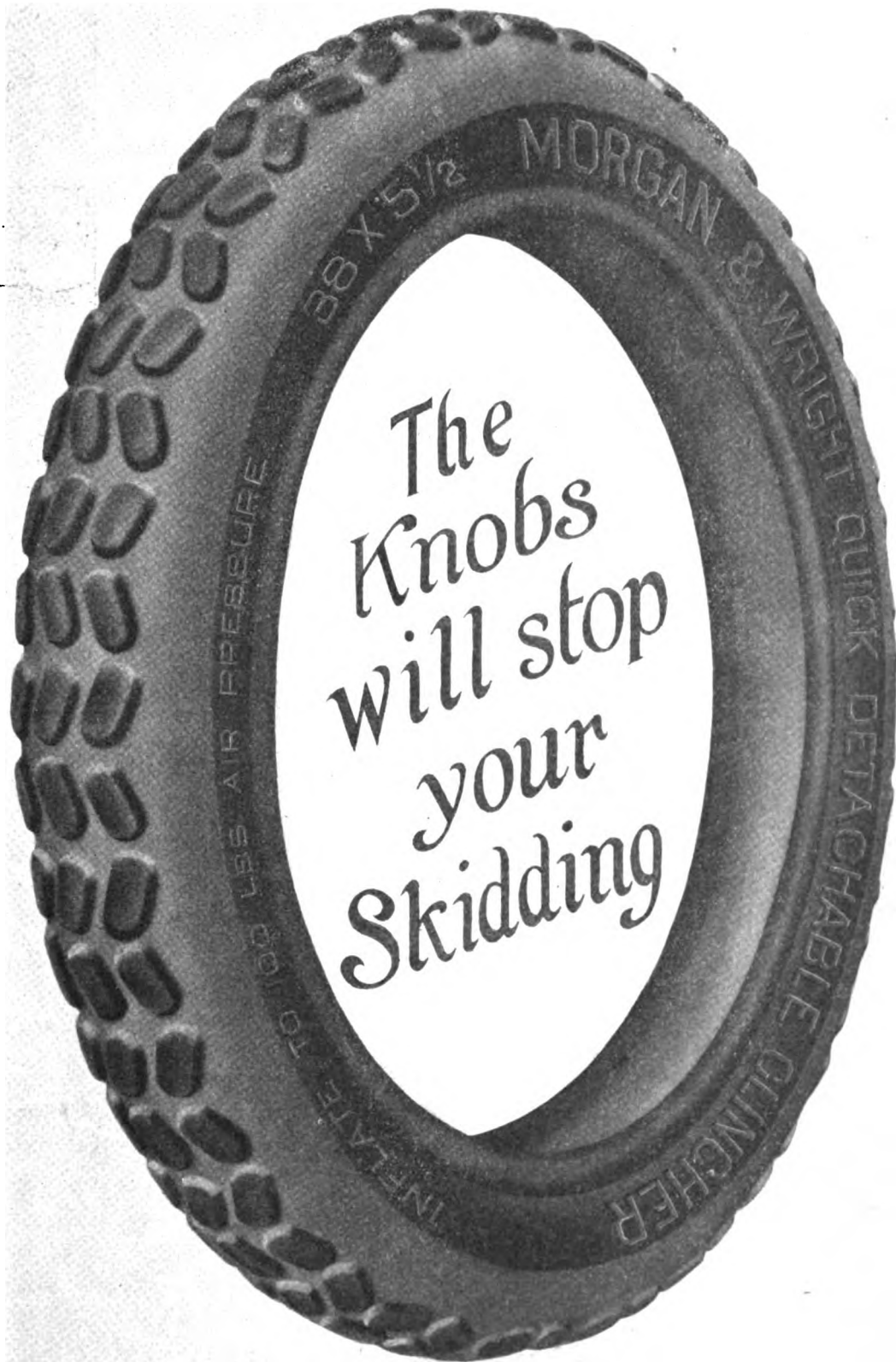
immediately creates in the minds of his prospects a feeling of security. Delco Ignition is known to cost more than ordinary ignition, so that a manufacturer must be willing to furnish only the best when he buys it.

Delco systems run the life of the car with only two or three adjustments of one set of contacts—an adjustment anyone can make in thirty seconds. Six dry cells will run a Delco equipped car 2,000 miles or more, giving full power until the batteries are entirely exhausted.

No other ignition system now made, either battery or magneto, will give your motor the flexibility that Delco will give; no apparatus could give more steady, dependable service year after year. Decide now to equip your motor with Delco, and rid yourself of ignition worry.

The Dayton Engineering Laboratories Co.

DAYTON, OHIO, U. S. A.



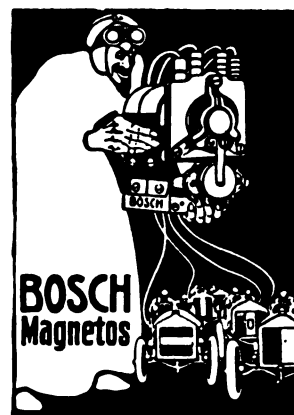
NOBBY TREAD TIRES

MADE IN DETROIT

MORGAN & WRIGHT TIRES
ARE GOOD TIRES

SOLD EVERYWHERE

Bosch Equipped Cars Supreme During 1910



Among Important 1910 Victories of Cars Equipped with Bosch
Magnetos are the following:

Events and Trophies	Bosch Equipped Winners	Events and Trophies	Bosch Equipped Winners
The Glidden Tour.....	Chalmers	50-Mile Free-for-All	Benz
"Prince Henry" Tour (Germany), Austrian Daimler		200-Mile Free-for-All	National
Kaiser Nicholas Tour (Russia).....	Mercedes	Algonquin Hill Climb.....	National
Harrisburg Reliability Run.....	Pullman	Vanderbilt Cup Race.....	Alco
Coupe des Voiturettes (France).....	Zuccarelli	Wheatley Hill Trophy.....	Falcar
24-Hour Brighton Beach Race (May).....	Simplex	Fairmount Park Trophy.....	Chadwick
Prest-O-Lite Trophy.....	National	Fairmount Class 5.....	Lozier
Wheeler & Schebler Trophy.....	Marmon	Fairmount Class 4.....	National
Remy Brassard & Trophy.....	Marmon	Fairmount Class 3.....	Pullman
24-Hour Brighton Beach Race (Aug.).....	Stearns	Fairmount Class 2.....	Abbott-Detroit
Elgin Trophy	Lozier	City of Atlanta Trophy.....	Marmon
Illinois Trophy	National	Coco Cola Trophy.....	Falcar
Kane County Trophy.....	Marmon	Atlanta Speedway Grand Prize.....	Lozier
Fox River Trophy.....	Benz	Phoenix Desert Race.....	Kissel
Cobe Trophy Race.....	Marmon	Grand Prize Race.....	Benz
G. & J. Trophy.....	Falcar	Savannah Challenge Trophy.....	Marmon
Remy Trophy	Marmon	Tiedeman Trophy	Lancia
Indianapolis Speedway Helmet.....	Benz	Ferris Cup (Santa Monica).....	Lozier
Remy Brassard & Trophy.....	National	Free-for-All (Santa Monica).....	Lozier
100-Mile Free-for-All.....	Benz	Shettler Cup (Santa Monica).....	Durocar
		Light Car Race (Santa Monica).....	Maxwell

20 of the 21 great American Road Races were won by Bosch
Equipped Cars.

22 of the 23 total Long Distance Races on the Indianapolis, Atlanta
and Los Angeles Speedways during 1910 were won by cars using Bosch
Magnetos: A total 42 of the 44 big events—95 per cent..

INSIST ON HAVING A "BOSCH."

See Our Exhibit at the Garden

Bosch Magneto Company

NEW YORK

CHICAGO

DETROIT

SAN FRANCISCO

"Sufficiency"

Full 1911 Line of 10 Cars Now Being Shown by Our Dealers

BE SURE to see the new Black Crow Line at our dealers almost everywhere now, or write for catalogs and complete details with prices so that we can promptly arrange for a demonstration. Dealers are especially requested to write at once for our special 1911 proposition—representing the Black Crow now direct from the factory.

Styles and prices of 10 handsome 1911 models are now made to exactly suit the desire of each individual purchaser. Just the car to suit you can be found at any Crow dealer. 1911 improvements include all of the latest most desirable features both in construction for permanent satisfaction in service and appearance.

This is the car that made a world's record for \$1500 cars—190

miles in 184 minutes at Indianapolis, July 4, 1910, and is a prize winner in every class for the user under all conditions of service requirements.

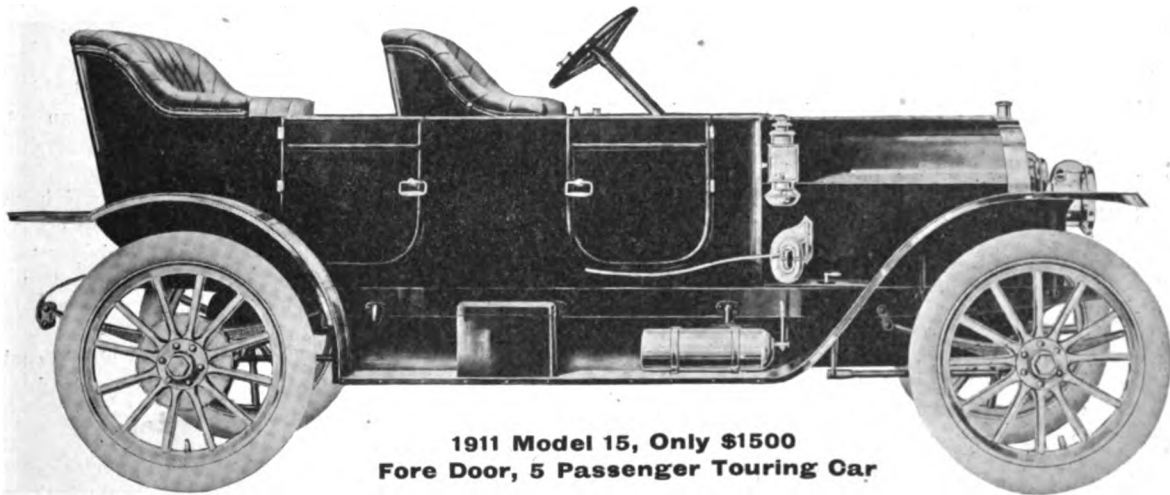
With the addition to our Factory, including new woodworking plant, now making all of our bodies, and with our new testing quarters we are making a full line ranging in price from \$1000 to \$2000 in 2, 3, 4, 5 and 7 passenger models.

Here are the general Specifications of our 1911 Model 15 shown below at \$1500.

MOTOR—35-38 H. P. $4\frac{1}{4} \times 4\frac{1}{4}$ four "L" head" type cylinders cast in pairs; aluminum crank case; drop forged crank shaft.
LUBRICATION—Self-contained splash; circulation pump.
TRANSMISSION—Selective type sliding gear; three speeds forward.
COOLING—Thermo-syphon, Mercedes type radiator, ball bearing fan.
CARBURETOR—Schebler.

STEERING—Worm and Sector.
WHEEL BASE—112 inches.
WHEELS—34 in., tires $3\frac{1}{2}$ in.
IGNITION—Magnet and batteries.
FRAME—Channel section, pressed steel.
CLUTCH—Multiple disc, metal-to-metal in oil bath.
FRONT AXLE—Heavy pressed steel.
REAR AXLE—Semi-floating.
BEARINGS—Hyatt rollers.

BRAKES—Double System.
SPRINGS—Semi-elliptic, front; full scroll elliptic, rear.
UPHOLSTERING—No. 1 machine buffed leather.
COLOR—French gray striped in gold and black.
EQUIPMENT—Five lamps, generator, horn, tire repair kit, jack, pump, tools, tool box and magneto.
WEIGHT—2300 pounds.
TREAD—56 inches.



Full Line—10 Models—\$1000 Up
Dealers Write Us Direct

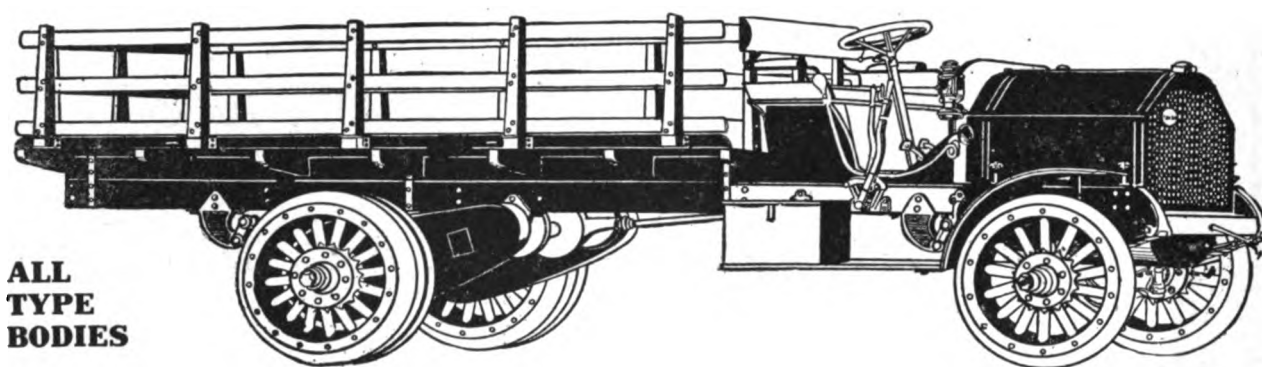
BLACK CROW

For Catalogs, Agency Proposition and Full Details, write

CROW MOTOR CAR COMPANY

Address—General Sales Offices, 1313 Rector Bldg., Chicago, Ill.

Factory—Elkhart, Indiana



ALL
TYPE
BODIES

KISSEL KAR

3 TON TRUCK

THE distinctive double wheel drive makes this the dependable truck under all road conditions. This double drive is secured by a patented lock on the differential with foot lever control, by which the driver at will can lock both rear wheels together. In instances where one wheel is in a hole, in mud or on ice, the other wheel supplies the traction, thus overcoming the stalling occurring in trucks with only one wheel drive.

The Kissel Kar Truck has universal joints in the distance rods, which preserve the balance of the load regardless of position of the wheels, preventing concentration of the strain. It is built throughout of the very highest grade material. The engine is of simplest design, with an oiling system consisting of a reservoir, and positively driven pump forcing oil through tubes to every section. An adjustable level regulates flow to meet every condition. Such a motor is easily operated and practically takes care of itself.

The Kissel Kar 3 Ton Truck meets every requirement of fast, economical and dependable delivery.

50 H. P.—\$3500—144 in. wheel base—68 in. tread—230 in. total length—6 ft. x 12 ft. 5 in. load space—10 to 12 miles per hour on direct drive, 15 miles unloaded on 4th speed.

New York Show—Kissel Kar Truck exhibit—Space 119-A.
Commercial Vehicle Section: Chicago Coliseum Show, Section D, Main Floor.

Pleasure Cars—204 Balcony, New York Show—Space A-4,
Armory, Chicago Coliseum Show.

WRITE FOR CATALOG

KISSEL MOTOR CAR CO.

Licensed under Selden patent.

159 Kissel Avenue

HARTFORD, WIS.

SPECIAL FEATURES

EXTRA DEPENDABILITY for any weather or road condition because of double rear wheel drive. When one wheel is in mud, in a hole or on ice, the other wheel supplies the traction.

ECONOMY OF GASOLINE—in the recent competitive truck run from Chicago to Milwaukee and return the Kissel Kar Truck consumed 15% to 20% less gasoline than other trucks of its class.

IT'S A TIME-SAVER because it has a fourth geared up speed which enables the driver to run fast and save time when the truck is empty.

The Kissel Kar 3 Ton Truck is economical and applicable to the wide range of uses.

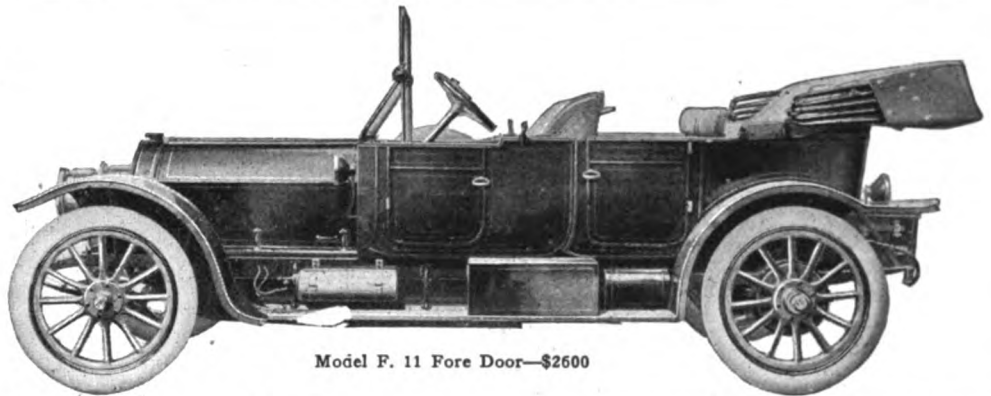
Special spring suspension carries engine without vibration whether truck is loaded or unloaded, making it noiseless and adding greatly to the durability.

Only highest grade materials employed.

Double universal joints between clutch and transmission prevents binding and back-lash.

In every way, the Kissel Kar Truck is trouble-proofed by accurate workmanship, and simple design. Write for full description.

Every Inch
a Car



Model F. 11 Fore Door—\$2600

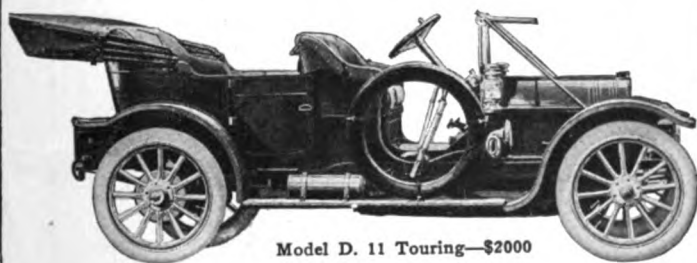
KISSEL KAR

Mechanical refinement is the *claim* of many motor cars, but it's a tangible *fact* in only few—among the few is the KISSEL KAR.

Its quiet, easy running motor, the exhilarating buoyancy of its silent, swift motion—these are proofs of the detailed perfection of every part, the *result* of the exceptional system of multiplied inspection under which every part of the Kissel Kar is produced.

Luxurious in appointment and finish, extra roomy, exceptionally comfortable, the Kissel Kar classifies itself as a car of quality—the kind of a car you will be proud to own, and in which you will realize the fullest pleasure of motoring.

Ride in a Kissel Kar—simply *ride* in one—and you will get the idea of what we are trying to describe.



Model D. 11 Touring—\$2000



Model L. D. 11 Touring—\$1500

Model L. D. 11

This 4 cyl. 30 H. P. Kissel Kar at \$1500 has, in common with the higher powered models, all the attractiveness and comfort characteristic of high grade cars—4 and 5 passengers.

Model D. 11

This is the model that broke the Los Angeles to Phoenix record by nearly 4 hours, defeating a big entry of higher priced cars with national reputations as fast cars—4 and 5 passengers. 50 H. P.—\$2000.

Model F. 11

The sensational value of 1911—6 cyl. 60 H. P. 5 and 7 passengers, \$2500. An aristocratic, powerful car with all the best values.

The Kissel Kar Truck is the commercial truck of reliability and economy.

See It at the Shows

New York Show: Pleasure Cars, Space 204, Balcony; 3 Ton Truck, Commercial Vehicle Section, Space 119-A.
Chicago Show: Pleasure Cars, Armory, Space A-4; 3 Ton Truck, Section D, Main Floor.

Write for illustrated portfolio fully describing the Kissel Kar line.

KISSEL MOTOR CAR CO.

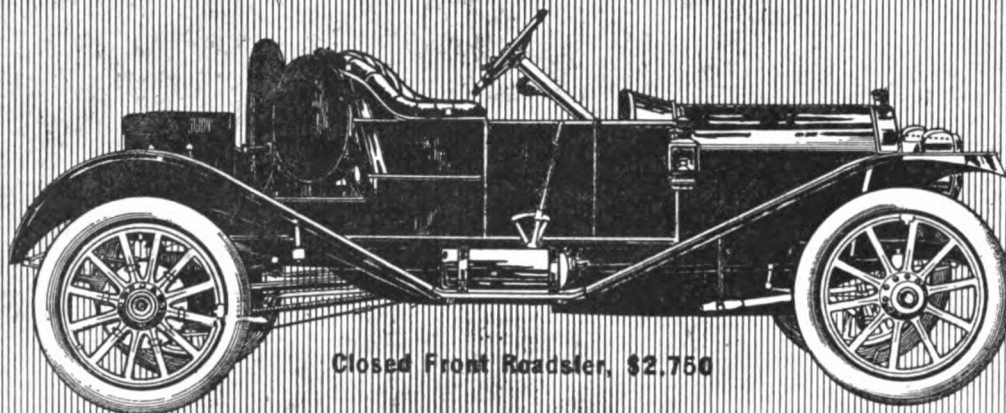
Licensed under Selden patent.

159 Kissel Avenue

HARTFORD, WIS.

THE MARMON

"The Easiest Riding Car in the World"



Closed Front Roadster, \$2,750

The Perfected Evolution of Years

Practically all the remarkable string of Marmon victories and the marvellous new speed records established by the Marmon, were won with Marmon stock chasses—the kind you buy.

This chassis is the perfected evolution of years. Its consistent success in long races has been no surprise to Marmon owners.

The Marmon Won

Cobe Cup Race	Wheeler & Schebler Trophy
200 Miles—163½ Minutes	200 Miles—166½ Minutes.
Wheatley Hills—Vanderbilt	Atlanta Speedway Trophy
190 Miles—190 Minutes	200 Miles—182½ Minutes
Atlanta A. A. Trophy	Los Angeles—Grand Prize
120 Miles—107 Minutes	100 Miles—76½ Minutes.
Los Angeles—Two Hours	City of Atlanta Trophy
148 Miles—120 Minutes	200 Miles—171½ Minutes
Vanderbilt—Donor's Trophy	Remy Grand Brassard
278.08 Miles—256½ Minutes	100 Miles—80½ Minutes
Elgin Kane County Trophy	Savannah Challenge Trophy
169 Miles—184¾ Minutes	277 Miles—263¾ Minutes

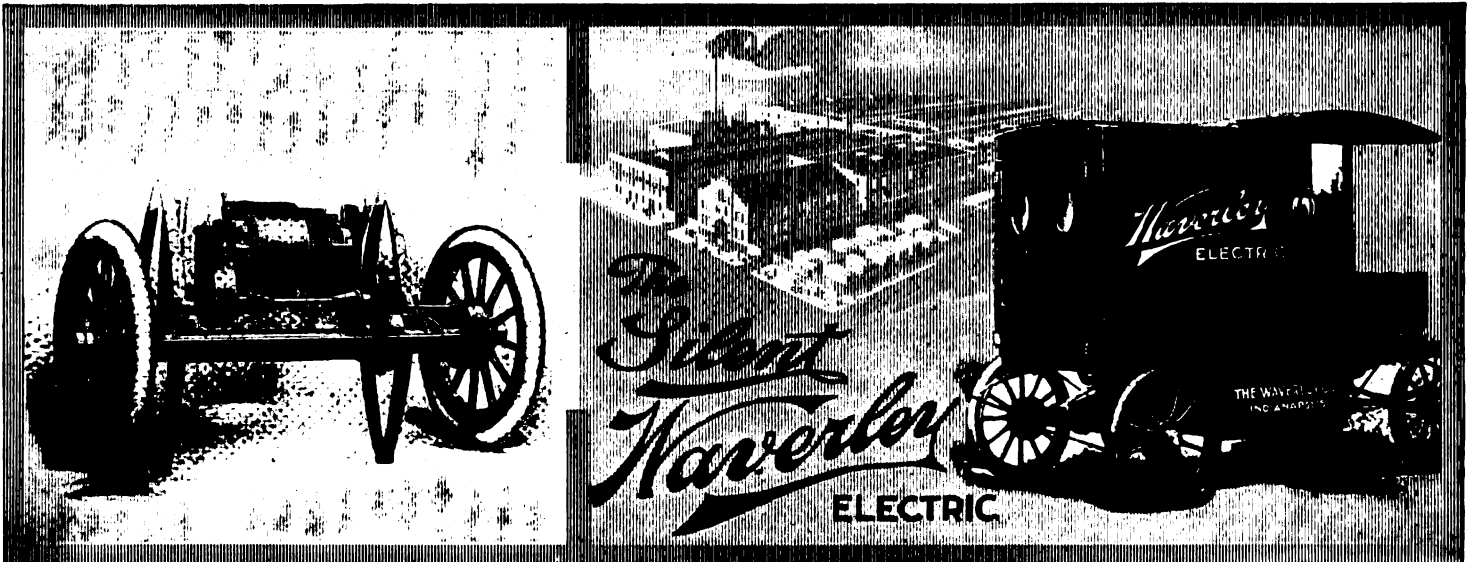
And a number of other Long-Distance Events

Nordyke & Marmon Co.
INDIANAPOLIS (Etab. 1851) INDIANA

Sixty Years of Successful Manufacturing.



LICENSED UNDER SELDEN PATENT.



The Famous Silent Waverley—High Efficiency Shaft Drive Proved by Five Years Road Test and Three Years of Use by Owners

Model 83 New Waverley Delivery Wagon for Retail Business—Delivering Loads of 600 to 1000 Pounds According to Equipment

Shaft Drive Efficiency in Light Electric Delivery

All the advantages of the Silent Waverley High Efficiency Shaft Drive are presented in Model 83 delivery wagon illustrated above.

The great power of the shaft drive—its freedom from troubles—the efficiency of the Herringbone Gears (98.7%)—the complete inclosure of the driving system—the oil bath—make this the ideal wagon for light delivery purposes.

Our new model 83 is specially designed for retail business houses delivering loads of 600 to 1000 pounds.

Dry goods houses, groceries, laundries, meat markets, florists, millinery houses, confectioners, caterers—every retail house making many deliveries—find in this wagon the utmost economy.

A Waverley Electric for Every Purpose

There is a Waverley Electric for every commercial purpose from the light delivery wagon to trucks for manufacturers and wholesalers.

These are built from the ground up in the most complete factory in the world devoted exclusively to the manufacture of electric vehicles.

This means perfect interchangeability of parts and the promptest supply of replacements or repairs.

Our Maintenance Contract

There is a Waverley truck for every load up to two tons.

Before a man buys the Waverley, however, he has guaranteed assurance as to the COST OF UP-KEEP. This is in the form of our maintenance contract.

When we receive an inquiry from a possible truck user we invite him to give us the necessary figures about his business on which to base an accurate estimate as to the cost to him of running a Waverley Electric truck.

If he cannot use a truck economically we tell him so. We prefer to lose a sale to making one dissatisfied owner.

If the Waverley would save him money over his present method of delivery and transportation WE ARRANGE WITH OUR LOCAL DEALER to make a contract guaranteeing that the cost of upkeep per month shall not exceed a certain figure.

Contrast this definite contract with the vague generalities in which claims are so often made for motor trucks! Illustrated catalog on request. Address

THE WAYERLEY COMPANY Main Office and Factory Indianapolis, Ind.
196 South East Street

Makers of Electrics for 15 Years

CHICAGO BRANCH—1714 Michigan Ave.

See our exhibit at the shows—NEW YORK, Madison Square Garden, Space A-4, Main Floor.
CHICAGO—First Regiment Armory, A-2, 1st week; Coliseum, Section B, 2nd week.

Those car manufacturers, who place the satisfaction and convenience of their customers above every other consideration, including price, use as

Regular or Partial Equipment

Continental

Acme	Detachable Demountable Rims	Hudson
Alco	AMERICA'S MOST POPULAR	Lancia
American	DEMOUNTABLE	Locomobile
Amplex	RIMS	Lozier
Austin	STANDARD	McFarlan
Benz	UNIVERSAL DEMOUNTABLE RIM	Oldsmobile
Bergdoll		Packard
Cadillac		Peerless
Chadwick		Pope-Hartford
Columbia		Renault
Diamond		Simplex
Dorris		Stearns
Fiat		Stevens-Duryea
Grout		Velie

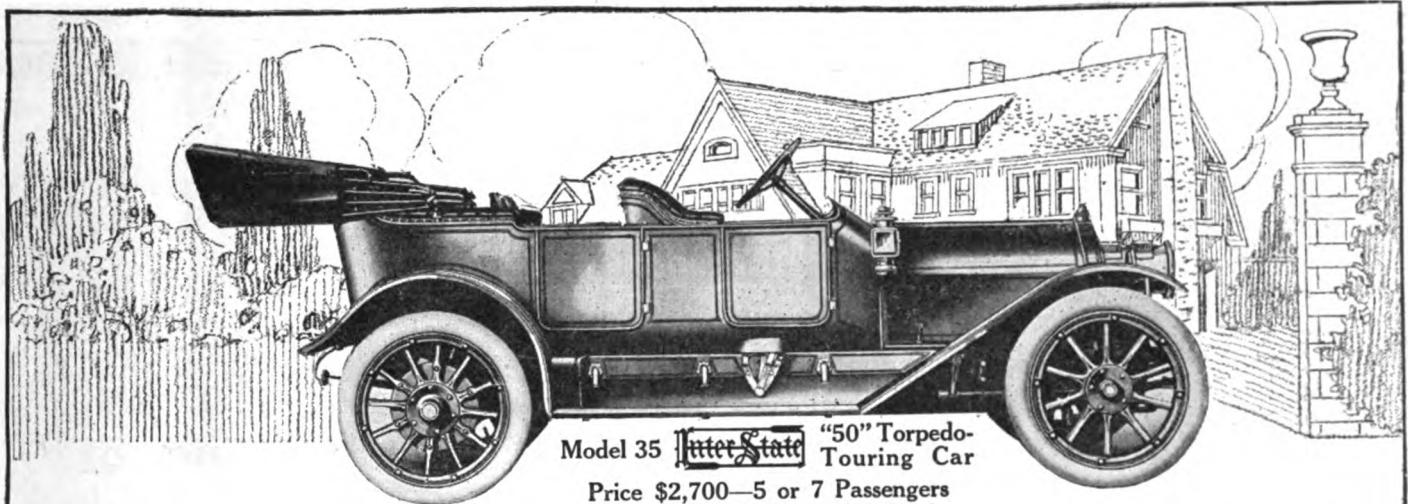


Exhibited at Their Respective Booths

ALSO RECOMMENDED AND SOLD BY THE

United Rim Company
Continental Caoutchouc Co.
Diamond Rubber Co.
G & J Tire Company
Goodyear Tire & Rubber Co.
B. F. Goodrich Company
Hartford Rubber Works Co.
Morgan & Wright
Mott Wheel Works
Standard Welding Co.
United Wheel & Rim Co.

Auto Shows — Madison Square Garden



Model 35 **Inter-State** "50" Torpedo-Touring Car

Price \$2,700—5 or 7 Passengers
Complete Equipment—Absolutely

Mighty Merit of **Inter-State** "40" Caused Demand for Larger "50" Car—Here are Both

Here is a significant fact to both Automobile Dealer and Customer:

THE sensational value of our medium-sized "40" produced a nation-wide clamor for this same "Inter-State quality" in a bigger, more powerful car.

The new *Inter-State* 5 or 7-passenger "50" Torpedo-Touring Car is our answer to that insistent demand. The big beauty is now ready for more dealers and more waiting customers. Four additional acres of factory floor space have made this greater output possible. Dealers and customers who have been disappointed, and others, neglected by our inability to furnish more "40's" for the market, can now be supplied.

Both "40" and "50" models are today being manufactured in our factory in quantities sufficient to fill the increased demand for the highest motor car quality at fair and reasonable cost.

Inter-State Sets Standard for Value

The "40" at \$1,750 and \$2,000 and the new "50" fully equipped at \$2,700 set the standard in motor car values. These are the prices that *should* be paid for the best of everything in materials—the utmost in performance—which you get in the *INTER-STATE*. *Greater motor car value cannot be purchased.*

The Inter-State Policy

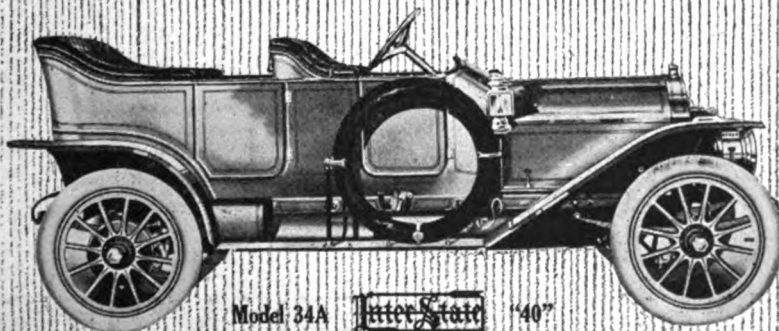
We have been mighty busy supplying the demand for our cars since the first we produced three years ago. We have never been big advertisers—never has there been any necessity for our creating a greater demand than we could supply.

We have simply progressed in our quiet way—no fireworks—no noise—testing carefully and slowly each car that leaves our factory. Too much haste would harm our cars—would react on us. In some localities the *Inter-State* predominates—more *Inter-States* than there are any two makes of cars. In other places the *Inter-State* is less extensively known for the simple reason that we have not had enough cars to develop and supply those particular fields.

INTER-STATE AUTOMOBILE CO., Muncie, Ind. Licensed Under Selden Patent

Branches: Boston, Mass., 153 Massachusetts Avenue; Omaha, Neb., 310 South Eighteenth Street

(60)



Model 34A **Inter-State** "40"
5-Passenger Torpedo-Touring Car—Price \$2,000

Inter-State
Touring Cars

A Reminder

Inter-State Automobile Co., Muncie, Ind.

☐ Send me particulars ☐ Send me Dealer Offer
Mark X before your request.

Name

Address

(M.W. 15)

12th Triumphal Year!

**Made to Get and Hold Your Business,
Manufacturing Practice in the Building of**

Diamond TIRES

Has Never Been Framed for Advertising Purposes

The design, size and construction are determined intelligently and scientifically by engineers who understand every problem involved.

We make the assertion that with the reduced prices on Diamond tires now in effect, even the manufacturer of low priced cars will not resist giving you Diamond tires if you specify Diamond and stand firm.

You get besides scientific building in Diamond tires — better rubber, more rubber — all together making tires that last longer, puncture less easily, stone bruise rarely — in short, *greatest mileage*.

**Get Away from the Misleading and Immaterial
Things—The Dust Thrown up to Cloud Your Vision**

Look to what counts most, what costs the manufacturer most, and what determines the service you are going to get for your money.

It is the quality and quantity of materials used, the quality of workmanship employed in their assembling, and the knowledge and character of the men behind the guns.

THE DIAMOND RUBBER CO., Akron, Ohio

By a Wide Majority Diamond

12th Year**TIRES****Greatest Mileage**

**Are FIRST—in the Garden Show
as They are in Daily Service.**

69 cars exhibited on Diamond tires—representing 32 of 67 automobile manufacturers exhibiting.

54 cars exhibited on highest competing make of tires, representing but 21 automobile builders.

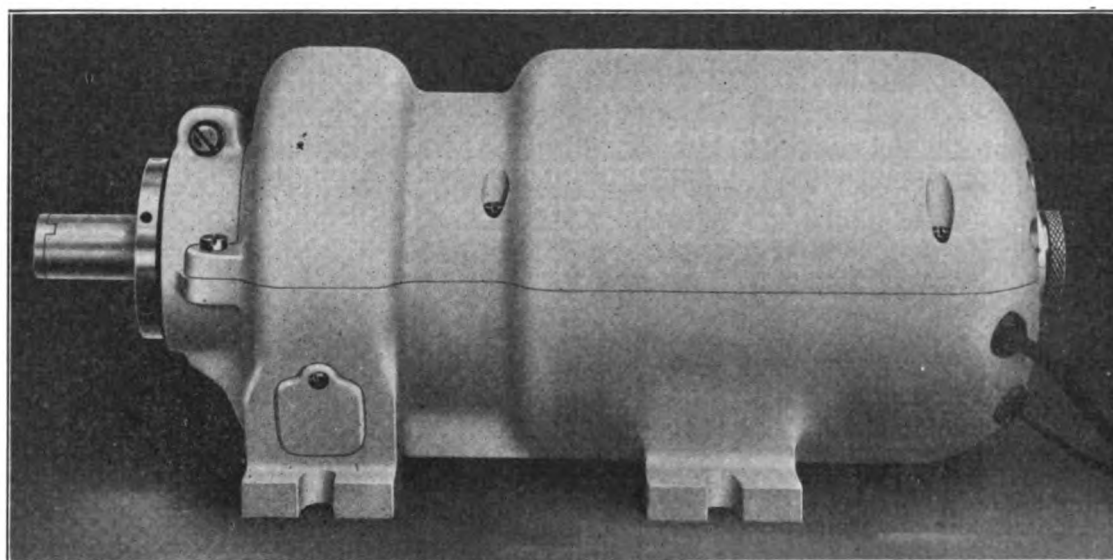
38 cars on second highest competing make of tires, representing 16 automobile manufacturers.

The Tire Choice of the majority of car builders, car dealers and car users for eleven years has been as it IS TODAY— **Diamond Tires**

THE DIAMOND RUBBER CO., Akron, Ohio

GRAY & DAVIS

Dynamo System for Electric Lighting of
Automobiles Marks a Distinct Step For-
ward in the Perfection of the Machine.



DYNAMO SYSTEM TYPE "C"
One-half life size. Weight complete, as shown, 19¼ lbs.

Purchasers of cars of the better class demand to-day something more than mere mechanical efficiency. All standard power plants are now fairly reliable. It is in the refinement of the car along the lines of comfort and luxury that efforts are now directed.

The new Gray & Davis Dynamo System is a decided contribution to this end and is bound to be in demand just as soon as it is generally understood. Controlled by a centrifugal governor that takes care of variable engine speeds and supplemented by the dynamo-charged battery at low speeds and while the car is at rest, this Gray & Davis system provides ideal lighting equipment. Cleanly, safe and convenient, it

instantly appeals to the taste of the fastidious and those who recognize and demand the best.

There are no obstacles to its use in machines of to-day, for since the substitution of self-contained oiling systems for the mechanical lubricator, placement for the dynamo is readily found.

The fact that this system bears the stamp of Gray & Davis, for years originators of lamp styles and lighting improvements, removes any doubt of its practical value. The dynamo system is offered only after a long period of costly experiment and development and with the fullest confidence.

CAN BE SEEN IN OPERATION AT NEW YORK, CHICAGO AND BOSTON AUTOMOBILE SHOWS

Send for Catalog

GRAY & DAVIS, Amesbury, Mass.

M a n u f a c t u r e r s o f A u t o m o b i l e L a m p s

FISK

Dual Pneumatic Equipment

With the REMOVABLE RIM

for

COMMERCIAL CARS

*Increases Daily Mileage
Reduces Upkeep Expense
Eliminates Vibration*

**One tire may do double service or one
or both can be changed without delay**

The Fisk Rubber Co.

**Chicopee Falls,
Mass.**

Department 23

**At
Garden
SHOW
Space 178
Balcony**

**23
Direct
Factory
Branches**



AT ALL THE SHOWS



Have you seen the

Truffault-Hartford **SHOCK ABSORBER**

"MAKES ALL ROADS SMOOTH ROADS"

in actual operation—seen what it does for an automobile traveling over a rough road?

If not, it will interest you immensely and incidentally may profit you to stop before our exhibit in either the New York, Chicago or Boston Automobile Shows.

SEE 'EM AT THE AUTO SHOW



shows. *Personal experience* will further demonstrate that your car needs the Truffault-Hartford.

We can fit any make of car and make any car fit for any road.

HARTFORD SUSPENSION COMPANY

181 Bay Street

EDW. V. HARTFORD, Pres.

JERSEY CITY, N. J.

NEW YORK—212-214 W. 88th St.
PHILADELPHIA—250 N. Broad St.

BRANCHES:
NEWARK—289 Halsey St.

BOSTON—319 Columbus Ave.
CHICAGO—1458 Michigan Ave.

Strongest Built Car



In The World

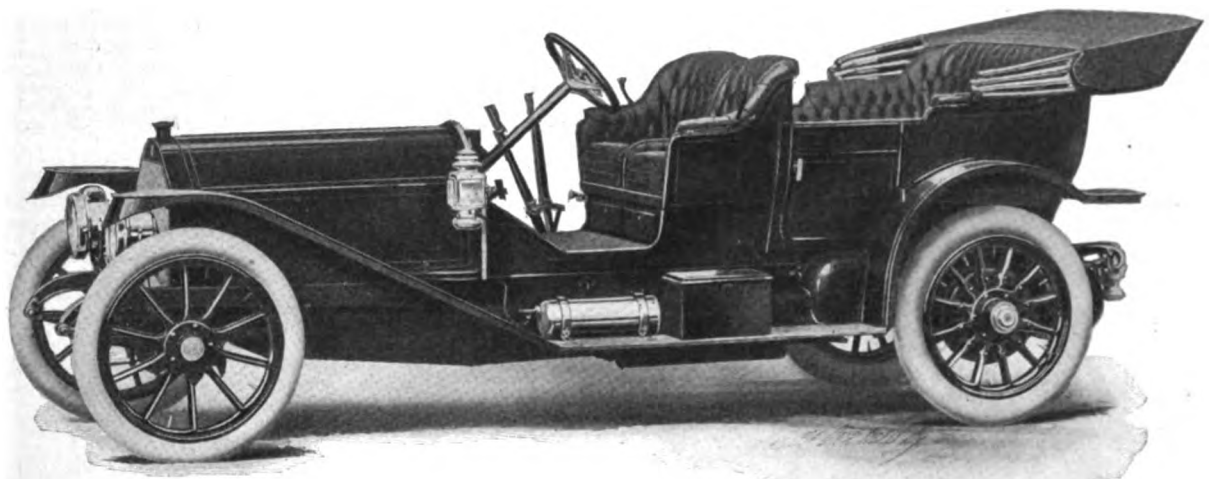
PALMER-SINGER

50% Saving in First Cost—40% Saving in Operating Expense

UNINTERRUPTED SERVICE UNDER ALL CONDITIONS

That's What We Offer—That's What We Guarantee in All Palmer-Singer Six Cylinder, Sixty Horsepower, Four Speed Forward and Reverse, Touring Cars.

The strongest built car in the world—withstands the extra strain caused by those not entirely familiar with automobile operation—no amateur can hurt the mechanical construction of a PALMER-SINGER.



We invite, in fact we challenge, comparison by the most critical and expert motorists, with any other high-class luxuriously appointed car, regardless of price or make.

Our guarantee of uninterrupted service means something—it is sincere—it takes effect the moment a car leaves our factory and is continuous—it is backed by men of unquestionable integrity—men whose word is their bond.

The element of chance does not enter into the choice of a PALMER-SINGER; you should at least investigate it and our claims for it before purchasing any car.

Our literature is most interesting and instructive; a postal will bring it to your address.

PALMER & SINGER MANUFACTURING COMPANY, Long Island City, N. Y.

1620 Broadway, New York

Licensed under Selden patent.

1321 Michigan Avenue, Chicago

ED. M. FOWLER, Western Sales Manager, 533 Van Ness Ave., San Francisco, Cal.

In line with our guaranteed service policy, we are now making some radical changes in many of our agencies. We invite correspondence with prospective representatives of high standing—those who can conduct our business along the highest class lines and not only make, but **KEEP** thoroughly satisfied owners.

1911

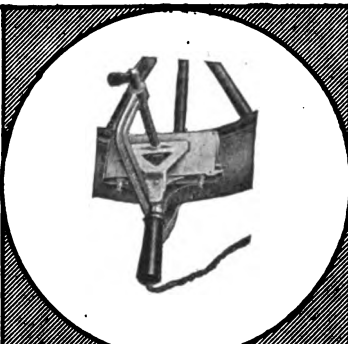
THE ONE COMPLETE

SHALER

1911

LINE OF VULCANIZERS

Mr. Jobber, you can now purchase all your vulcanizers from one firm, do away with a lot of red tape and minimize transportation expenses. We manufacture both electric and flame-heated vulcanizers—for the large garage, for the small repair shop, for the car owner; vulcanizers for use in the city or on the farm; vulcanizers for shop use or road side repairs; all kinds of vulcanizers.



Types B and D Electric Vulcanizer

These types operate from city lighting current. They are designed for use by both garages and private owners, for tube repairing and for mending cuts in casings without taking tire off the wheel. Type B has a rheostat to control the heat and will operate on both direct and alternating current. Type D has an automatic thermostat heat control and operates on either direct or alternating current as desired.

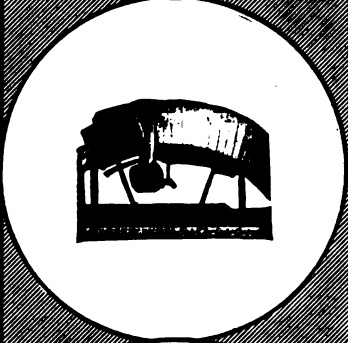
Type B, Iron.....	\$20.00
Type B, Nickel plate aluminum.....	25.00
Type D, Iron.....	12.50
Type D, Aluminum.....	15.00



Type J "Stitch-In-Time"

The Stitch-In-Time does the same work as Types B and D Electric. It is heated by an alcohol lamp and can be used by the roadside or on the farm as well as in the city. The temperature is regulated by an automatic thermostat and the machine is compact enough to carry in a tool kit.

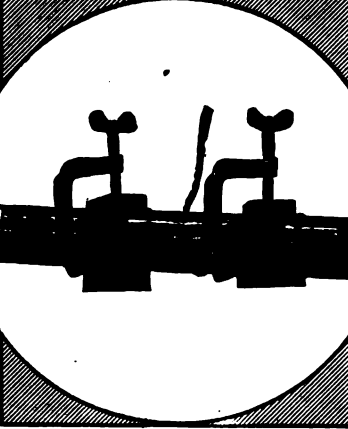
Type J, Stitch-In-Time.....	\$10.00
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Type C Electric Vulcanizer

This type is for use in public garages, for repairing blow-outs in casings. It fits inside the tire and brings the heat right against the new fabric, so that it is not necessary to cut away a lot of rubber and fabric to make a repair. The repair is made just as strong as desired by putting in additional layers of fabric on the inside of the tire.

Type C, for alternating current.....	\$20.00
Type C, for direct current.....	25.00



Type E "Gang" Electric Vulcanizer

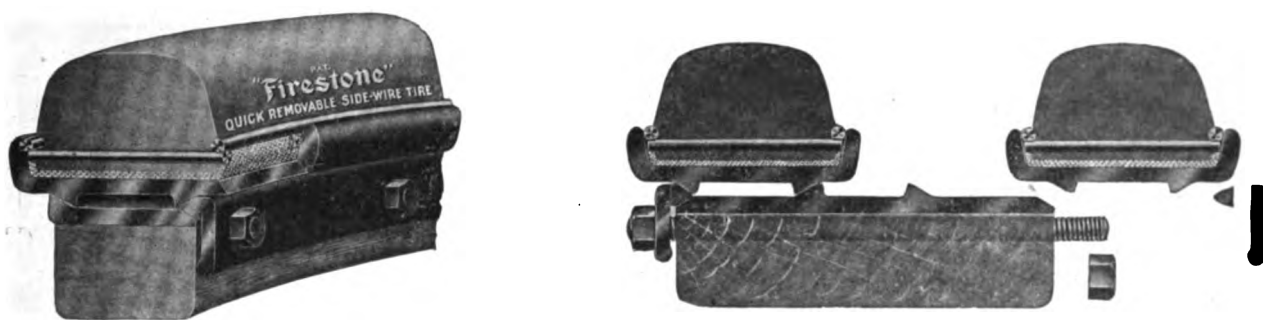
This type is for use in garages that have a quantity of inner tube work. It is twenty-four inches long and is furnished with four patent clamps and four blocks for four sizes of repairs. It will vulcanize six tubes as quickly as one, or will repair a two-foot slit at one setting.

Type E, for alternating current.....	\$25.00
Type E, for direct current.....	30.00

Write at once for complete description of our line and proposition for 1911.

C. A. SHALER CO., Mfrs.

1200 Fourth Street, Waupun, Wis.



Don't Lay Up Your Trucks for Tire Repairs

"Firestone"

QUICK REMOVABLE SIDE-WIRE TIRES

For Motor Trucks and Delivery Cars

enable the driver to change tires anywhere, in a few minutes—they forever do away with lay-ups for tire repairs or replacements.

They keep your deliveries going on according to schedule, no matter what happens to the tires—they cut off the dead expense of having your vehicles out of commission for tire changes.

We have thoroughly tried out this equipment in actual service. It is a reality, not an experiment.

Keep one or two spare rims with tires applied, at headquarters ready for use ; they are interchangeable on all wheels, front and rear, single or dual.

To make a change, the driver removes nuts and clamping flange, slides off the injured tire, rim and all ; then slides on the spare rim carrying tire already applied, replaces flange and resumes his trip.

The tire can be repaired or a new one applied

at any of our hundred-odd sales and applying stations.

This equipment enables you to remove injured tires at will, to be rebuilt or repaired before they are too far gone.

Repairs to Firestone tires frequently double their length of service—a feature that saves many thousands of dollars annually to Firestone users.

Firestone Quick Removable Side-Wire tires are the most important and money-saving improvement since the introduction of the original Firestone Side-Wire tire. Let us send you full information.

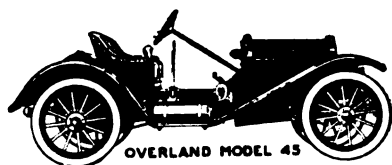
THE FIRESTONE TIRE & RUBBER COMPANY, Akron, Ohio

America's Largest Exclusive Tire Makers"

We Exhibit at the Madison Square Garden Show, New York, and the Chicago and Boston Shows

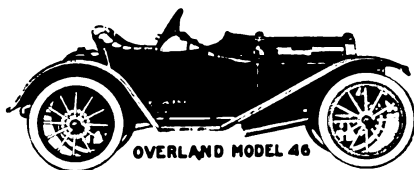
The Overland Line for 1911 Comprises 22 Models, from 20 to 40 Horsepower, at \$775 to \$1675

Prices include Magneto, Generator, 3 Oil and 2 Gas Lamps, Horn and Tools



OVERLAND MODEL 43

Price \$775



OVERLAND MODEL 46

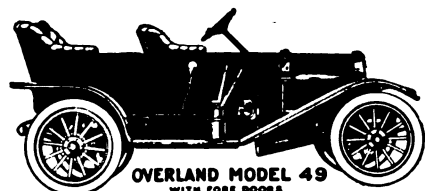
Price \$850



WILLYS-OVERLAND

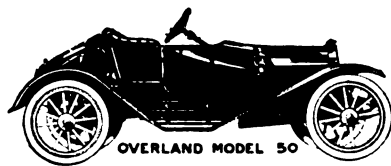
Price \$900

Representative models are to be on exhibit at the New York Show.
It will pay you to look them over.



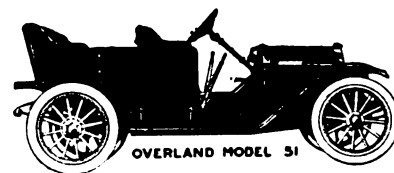
OVERLAND MODEL 49
WITH FORE DOORS

Price \$1095



OVERLAND MODEL 50

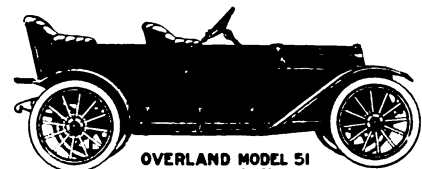
Price \$1250



OVERLAND MODEL 51

Price \$1250

The more rigid the investigation and the more careful your comparison, the better convinced you will be of their actual value in style and desirability, because there is more downright value and merit in them than in any other cars at anything like the money.



OVERLAND MODEL 51
WITH FORE DOORS

Price \$1250



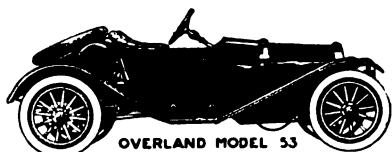
OVERLAND MODEL 52

Price \$1600



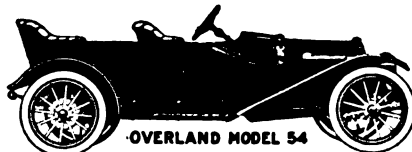
OVERLAND MODEL 52
WITH FORE DOORS

Price \$1600



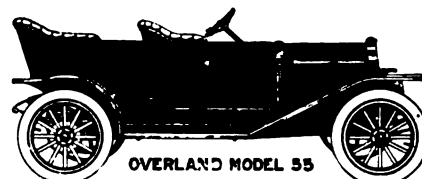
OVERLAND MODEL 53

Price \$1600



OVERLAND MODEL 54

Price \$1675



OVERLAND MODEL 55

Price \$1300

DO NOT FAIL TO LOOK UP

THE WILLYS-OVERLAND COMPANY

Toledo, Ohio

Indianapolis, Ind.



Vol. XXVI.

New York, U. S. A., Thursday, January 12, 1911.

No. 2

A. M. A. A. MAKES ITS ENTRY

Michigan Man Heads New Organization of Car Makers—Offices to be Established in New York City.

Guided by the promoters of the "independent" show, which last week held the boards in Grand Central Palace, New York, the car manufacturers who exhibited there finally effected an organization of their own under the title Automobile Manufacturers' Association of America, and immediately applied for a charter under New York laws. The preliminary steps were taken at a meeting held on Thursday, 5th inst., when twenty-three of them met in the Manhattan Hotel and subscribed to the objects of the meeting, elected directors and applied for a New York charter.

After the charter was received another meeting was held on Tuesday last, 10th inst., when the organization was completed by the election of the following officers: President, Col. Theodore A. Campbell, Imperial Automobile Co., Jackson, Mich.; first vice-president, William S. Jones, Otto Gas Engine Co., Philadelphia, Pa.; second vice-president, Prof. Warren S. Johnson, Johnson Service Corporation, Milwaukee, Wis.; treasurer, William J. Mills, H. H. Babcock Co., Watertown, N. Y.; assistant treasurer, Carl F. Johnson, Johnson Service Corporation, New York City; secretary, C. W. Kelsey, C. W. Kelsey Manufacturing Co., Hartford, Conn.; assistant secretary, J. L. Robinson, New York City; executive committee, Messrs. Campbell, Carl Johnson, Kelsey, Jones and Louis J. Bergdoll, the latter of the Louis J. Bergdoll Motor Co., Philadelphia, Pa.

Herbert Longendyke was selected to fill the post of general manager. The directors, who had been chosen at the previous meeting, are as follows: Carl F. Johnson, Johnson Service Corp.; W. S. Jones, Otto Motor Sales Co.; Thomas Aldcorn, Chicago Pneumatic Tool Co.; W. J. Mills, H. H. Babcock Co.; Col. T. A. Campbell, Imperial

Automobile Co.; Louis J. Bergdoll, Louis J. Bergdoll Motor Car Co.; H. H. McFarlan, McFarlan Motor Car Co.; C. W. Kelsey, C. W. Kelsey Manufacturing Co.; E. W. Mommel, Clark-Norwalk Motor Car Co.; S. E. Baily, B. C. K. Motor Car Co.; counsel, Frank Harvey Field, New York.

It is one of the purposes of the organization to effect openings for its members in the larger cities of the country; to stimulate trade where it is lax, and generally to assist dealers. It is stated that there is no intention to oppose or run counter to any of the existing organizations, but that it is the intention to promote a show in Grand Central Palace next year, the option on that building already having been obtained.

It is probable that Herbert Longendyke, who was selected to manage the association, will establish offices in New York. He is one of the two residents of Troy, N. Y., who promoted the recent show in the Palace. Both gentlemen are identified with a carriage publication in Troy, but it is stated that Longendyke will at once relinquish that connection and devote himself wholly to his new duties.

Firestone Uncovers a Big Rim Plant.

In giving out information regarding the huge new plant of the Firestone Tire & Rubber Co., of Akron, Ohio, which now is nearing completion, President Firestone did not tell all he knew about it. He reserved an important bit of news until this week, i. e., that several of the buildings are to be devoted not to the manufacture of tires but rims—rims of all sorts, for cars, trucks and carriages, an announcement that has more than a little meaning all its own, so peculiar is the rim situation. As a matter of fact, the rim plant already has been equipped with machinery for rolling, shaping, electric welding, galvanizing, etc., and is in operation, and so soon as the new tire factory is completed, the buildings now used for tire production will be vacated and added to the rim plant, thus affording an enormous production. Mr. Firestone intimates broadly that the effect will be shown in a revision of rim prices that will have a distinctly downward tendency.

SELDEN ROUTED

Ford Wins Nine Years' Fight—Court of Appeals Decides Famous Patent Does Not Control Modern Gas Engine—Applies to Obsolete Type.

After some nine years of legal warfare it has been judicially and finally decided that the Selden patent is a valid patent—but not as applying to such gas engines as are in use today, and as have been responsible for the development of the motor car. The learned judges declare that while the patent did not lack invention or utility, it was not such as to entitle Selden to rank as an inventor, and they add that although their ruling denies his claim to the modern gas engine, it does not deprive him of the just reward for his labor, implying that the royalties he has received because of the peaceful and semi-general recognition of his claim by manufacturers affected already have amply repaid him.

It was on Monday last, 9th inst., that the United States Circuit Court of Appeals for the Second District handed down its decision that the famous patent does not cover the explosion or "constant volume" motor of modern times, but that it does apply to and is valid so far as concerns slow combustion or "constant pressure" engines, of which latter there are practically none in use. A "constant pressure" motor is essentially one employing injection of liquid fuel, and which, despite long continued effort to develop it into commercial practicability, has failed to make substantial progress.

The decision which thus upsets the Selden patent was delivered by Judge Noyes, Judges Lacombe and Ward concurring. It was rendered on the appeal of the Ford Motor Co. from the decision of Judge Hough, in favor of the Columbia Motor Car Co., and the patentee, George B. Selden,

and reverses Judge Hough, whose decision was given in September, 1909. The one-time New York agents of the Ford company, C. A. Duerr & Co., and two of the Ford customers, O. J. Gude and John Wanamaker, were also involved in the proceedings, separate suits for infringement originally having been filed against them as handlers and users of the Ford product. Separate suits also had been filed against Panhard & Levassor and Henry and A. C. Neubauer, who handled imported cars. More than a score of similar actions against others have been filed by the Selden interests, and are pending, but the Ford-Panhard-Neubauer suits constituted the test cases on which all of the others must stand or fall, and, of course, they now fall to the ground.

The final defeat of the patent is in the nature of a tremendous triumph for one man—Henry Ford, of Detroit, Mich. All of the other defendants were merely incidental to the Ford fight, and though he himself—for he is to all practical intents and purposes the Ford Motor Co.—might long ago have made his peace and become a licensee under the patent, he resolutely set his face against it and refused any and all efforts to compromise the stand he had taken. He set himself against the patent early in his career, and, despite the formidable interest arrayed against him, he at no time showed symptoms of wavering; for it was around the Selden patent, as is very generally known, that the Association of Licensed Automobile Manufacturers had been formed and constructed into a powerful and far reaching organization, and although the names—first the Electric Vehicle Co., which was succeeded by the Columbia Motor Car Co., and George B. Selden—appeared as the forces opposed to Ford, it was the association itself that waged the fight to uphold the patent.

Considering the important and diverse interests involved, and apparently affected by the decision, it cannot be said that the judgment of the Court of Appeals created much of a furor. Most of those who are enlisted in the A. L. A. M. are present this week in attendance at the Madison Square Garden show, and the fact that their organization has been given a body blow did not visibly affect any of them. They appear to accept it as one of the fortunes of war, and good nature and raillery rather than the reverse is the rule when the defeat is discussed. That it will not affect the future of the association is a quite general belief. In fact, the situation is best expressed by Col. George Pope, treasurer of the organization, and one of its conservative members.

"The decision was rendered too late in the life of the patent to prove of far reaching consequence," said Colonel Pope when his opinion was sought. "The A. L. A. M. has accomplished so much good outside of the patent and its members are bound by

so many other ties that it is not likely that the adverse decision will affect its existence. The only real losers are the Columbia Motor Car Co. and George B. Selden, who no longer will receive money from royalties. The members of the A. L. A. M. themselves will be gainers to that extent."

Immediately after judgment of the Court of Appeals was rendered on Monday last, it was announced, through the Association of Licensed Automobile Manufacturers that the Columbia Motor Car Co. and George B. Selden were arranging to apply for a writ of certiorari with a view of bringing the case before the United States Supreme Court for final decision. The Supreme Court, however, exercises its option in such matters, and it is rare, indeed, that it consents to take cognizance of litigation involving patents. Later the executive committee met and reconsidered the original determination. It decided to accept the verdict and there will be no further proceedings. For all practical purposes the last has been heard of the famous, hard-fought patent.

However, Henry Ford, who accepted his victory modestly, has stated that he is ready to continue the fight, if need be, and is quite willing that the patent shall be passed on by the highest court in the land if that court will consent to pass on it, which he, like most other persons, is inclined to disbelieve.

The patent owes much of its fame to the late George H. Day, who, in 1900, was president of the Electric Vehicle Co., of Hartford, Conn. Convinced that it was of a basic nature, and as such, would give control over the then new and budding industry, the Electric Vehicle Co. assumed the aggressive. One of the first suits filed was leveled at the Winton Motor Carriage Co., of Cleveland, Ohio. That now great but then struggling company prepared to fight as best it might, but Day, a born diplomat, ultimately succeeded in inducing the Winton principals to recognize the validity of the patent and to consent to the issuance of a decree against the Winton company. Soon thereafter he prevailed on most of the other leading manufacturers similarly to recognize the patent, and fortified by this recognition, the able Day set in motion the plans which resulted in the formation of the Association of Licensed Automobile Manufacturers, of which he soon thereafter became the general manager. The organization prospered, and the Selden licenses became valuable franchises. The Ford Motor Co. might have obtained one, but declined to parley or to recognize the patent, and, accordingly, the suit which just has been decided was filed in 1903.

The late Thomas B. Jeffery, who manufactured the Rambler car, was the other most prominent pioneer of the industry who likewise refused to agree to the terms of the license organization, but he was not

so militant in his refusal as was Ford, and, as a result, he escaped the litigation, although it is common report that he offered to help Ford bear the burden and expense. Several others are understood to have done likewise, but Ford determinedly refused all offers of assistance, and from start to finish fought the case alone. The litigation cost him something like \$250,000, and he now states that he could have saved money by recognizing the patent. But his fighting blood was aroused, and, secure in the belief of the invalidity of the Selden claims, he never let up, not even in September, 1909, when Judge Hough's decision in favor of the patent created a semi-panic in the trade and caused such a rush of applications for Selden licenses and A. L. A. M. memberships that the American Motor Car Manufacturers' Association, which had been formed to render plainer the line of demarcation between "licensee" and "independent," was left without head or heels and was more or less gracefully dissolved. Although Ford promptly filed an appeal, the others deemed discretion the better part of valor and paid large sums in accrued royalties for what generally was esteemed to be "good business insurance."

Probably none of the several surprises that have attended the litigation was greater than that caused by the swiftness with which the Court of Appeals rendered its decision. It was only a month ago that it heard the final arguments and received the supplementary briefs, and as thousands of pages of intricate and technical testimony were subject to the court's review, it was not anticipated that a decision would be reached for several months. Apparently the three judges are quick readers, and devoted a part of their Christmas holiday to the consideration of the case.

The essence of the decision of the Court of Appeals, printed elsewhere, is that the engine which Selden patented was an improvement on the original Brayton two-cycle constant pressure or slow combustion compression gas engine, and as such an improvement the patent, limited to the modified Brayton engine, which it specifies, is held to be valid. But, says the Court, "The contention that a motor vehicle constructed by the patentee (Selden), according to the teaching of the patent, operated so successfully as to demonstrate that Selden had solved a great problem and is entitled to the status of a pioneer inventor is, we think, without foundation." The court finds, however, that the engine which Ford used was not only an improved Otto four-cycle explosion gas engine, but that it employed a carburetter and timed electric ignition, none of which are comprehended by the Selden claims, hence their final upset.

The decision is remarkably clear, consecutive and convincing in its terms, and is so full of instruction and human interest that it is well worth the reading, despite its great length. The concluding opinion

of the Court of Appeals is thus crystalized:

"It is our opinion, for these reasons, that in this road locomotive combination embracing as its engine element an engine of the constant pressure type, the substitution in place of such engine of an engine of the constant volume type destroys the unity of the combination, because the two engines do not perform the same functions in substantially the same way. Granting the patent as broad a range of equivalents as its interpretation will permit, and giving due consideration to the degree of invention involved, still we are not able to hold that the Otto improved engine is the equivalent of the Selden engine, or that the defendants infringe by employing it as an element of their motor vehicle combination.

"Let us briefly notice the consequences of an opposite conclusion. The Otto engine was in the prior art. Assuming that it was not adapted for propulsion purposes in a light vehicle, it would seem clear that the first person who showed invention in reorganizing and adapting it would have been entitled to a patent for the improvement, and with Otto's permission, could have used the improved engine in a vehicle. Similarly it would seem that he might have obtained a patent for a combination embracing the improved Otto engine as an element. But these things could not have been done if infringement is shown in this case. Selden, although selecting the Brayton engine which was designed to avoid the explosive type, yet pre-empted the field and prevented all improvements for propulsion purposes in that type.

"While the conclusion of non-infringement which we have reached leaves the patentee empty handed with respect to his patent for the short time it has to run, it cannot be regarded as depriving him through any technicality of the just reward for his labors. He undoubtedly appreciated the possibilities of the motor vehicle at a time when his ideas were regarded as chimerical. Had he been able to see far enough he might have taken out a patent as far-reaching as the Circuit Court held this one was. But, like many another inventor, while he had a conception of the object to be accomplished, he went in the wrong direction. The Brayton engine was the leading engine at the time, and his attention was naturally drawn to its supposed advantages. He chose that type. In the light of events we can see that had he appreciated the superiority of the Otto engine and adapted that type for his combination, his patent would cover the modern automobile. He did not do so. He made the wrong choice, and we cannot, by placing any forced construction upon the patent or by straining the doctrine of equivalents, make another choice for him at the expense of these defendants who neither legally nor morally owe him anything."

SWIVEL JOINT NOT PATENTABLE

Patent Affecting Speedometers Bowled out by Court of Appeals—Principle too Old to be Pre-empted.

The swivel joint connection of the flexible shaft, which actuates speed-indicating devices, no longer is a subject for dispute or litigation, the United States Circuit Court of Appeals for the Seventh District in Chicago having last week affirmed the lower court's decision against the invalidity of the A. B. Cadman patent, No. 837,188, of November 26, 1906. The parties to the suit were the Warner Instrument Co., of Beloit, Wis., which controls the Cadman patent, and the Stewart & Clark Mfg. Co., of Chicago, which was charged with infringement. The Circuit Court ruled in favor of the defendants, but the Warner company appealed and it was the decision on this appeal that bowled the patent down and out. The opinion was delivered by District Judge Carpenter, Circuit Judges Grosscup and Seaman concurring.

After pointing out that a patent on a swivel joint connection or a power shaft had been granted to one G. F. Green as early as January 18, 1870, the court says concerning the application of the idea to speedometers:

"The problem involved the transmission of power from a rocking wheel to a stationary indicator. The problem which was met in the case of the dental machines and the shearing machines was the transmission of power from a stationary source to a moving operating point. Clearly it did not require inventive genius to transfer the universal or swivel joint from one end of the shaft to the other.

"All that Cadman did was to employ a universal joint of the construction shown in the Stone, Smith, or Seeger & Dedrick patents, and in the Jones, Hodgson, and Parrish & Smith structures. The appellant claims, however, that none of the workers, prior to Cadman's invention, ever thought of making an application of the old and well-known universal joints to automobile speed indicators. If, in the art relating to the transmission of power the flexible shaft had never been used in connection with a universal or swivel joint, appellant's contention would be sound.

"The mere bringing together of old parts and allowing each to work out its own old effect, without producing some new machine or product is not invention. It is necessary always to determine whether the conception of a combination of old parts results from the intuition of the inventor as distinguished from the skill of the mechanic. * * * *

"The true test is whether Cadman produced a new result or an improved method

of producing the old result. Clearly he did not. At the most he applied an old and well-known combination of elements, each one performing its original function, to a new one. Such was not invention."

Quarter-Million Company Formed in Galt.

Canada Motors, Ltd., is the style of a new corporation which has been formed in Galt, Ont., with a capital stock of \$250,000, and which purposes to begin immediately the manufacture of automobiles. It already has leased a temporary factory, pending the erection of permanent buildings. The officers of the company are: President, George Dobbie; vice-president, A. M. Edwards; secretary, C. Jansen; managing director, D. R. Perry; treasurer, E. J. Getty. These officials with Dr. MacKendrick, F. Stewart Scott and Dr. T. E. Campbell, all of Galt, and A. N. W. Clare, of Preston, constitute the board of directors.

Bankers in a Pittsburg Truck Project.

For the purpose of manufacturing a one-ton truck, the Pennsylvania Motor Car Co. has been organized in Pittsburg with capital stock of \$500,000; it will, it is stated, at once erect a plant in the North Side section of that city. Among those who are said to be identified with the company are: S. A. Moore, vice-president of the First National Bank of Philippi, W. Va.; L. M. Lucius, treasurer of the West Cleveland Banking Co., Cleveland, Ohio; William T. Lyon, president of the Guardian Trust Co.; Christopher Magee, Jr., and John T. Walsh, of Pittsburg.

Barnes Plant Buyer Will Continue Business.

At the public sale of the assets of the bankrupt Barnes Motor Car Co., of Detroit (formerly the Anhut Motor Car Co.), they were bid in by Frank Howard, of Detroit, for \$10,025. The sale included machinery and several finished and unfinished cars, a lot of parts and other material. The factory building itself was leased property. It is understood that Howard, the purchaser, will organize a new company under another name and continue operations.

Excelsior Retires From the Jobbing Trade.

The Excelsior Supply Co., of Chicago, has entirely retired from the jobbing trade in which it has been engaged for many years, and hereafter will confine itself to the manufacture of the several specialties with which its name has been identified. Most of the large stock of Excelsior accessories has been purchased by the Manufacturers' Supply Co., of Philadelphia.

Spitfire Plugs to Spark Across the Sea.

Seabrook Bros., of London, have been appointed British representatives of A. R. Mosler & Co., of New York. The appointment carries with it the sale of Spitfire spark plugs and the other Mosler products throughout the United Kingdom.

LEATHER PRECEDED CHAIN GRIP

Grounds on Which Parsons Patent Was Invalidated—Prior Inventions and Principles Reviewed by Higher Court.

Although first reports made appear otherwise, the decision of the United States Circuit of Appeals for the Seventh District, which upset the Parsons patent, No. 723,299, issued March 24, 1903, which covers the well-known Weed chain tire grip, proves to be of such a far-reaching and conclusive nature as to throw open the entire field to the manufacture and sale of all manner of such non-skid appliances, unless the Maxim & Bardwell patent which is judicially determined to have antedated Parsons is brought to bear by its owners, who are said to be the Columbia Motor Car Co., of Hartford, Conn.

The appeal, which was decided, was that of the Excelsior Supply Co. and the Motor Appliances Co., of Chicago, from a decision in favor of the Weed Chain Tire Co. and the Parsons patent, which had been rendered by the United States Circuit Court. The lower court held the Parsons patent to be "basic to a large extent," and that the infringing grip, the Zig Zag, was almost identical with the Weed patent device. The Court of Appeals, in its decision, which was delivered by Judge Grosscup, finds that far from being basic, the Parsons device was antedated nearly two years by the Maxim & Bardwell patent, No. 681,173, issued August 20, 1901.

The essence of the Weed patent was contained in the provision for a non-skidding chain which was free to move or shift position on the tire—"circumferential creeping" it was technically termed in the court proceedings. The Maxim & Bardwell patent covered a "detachable traction strap" which the Court of Appeals declared was precisely like the Parsons construction save that it was leather instead of metal; the earlier leather strap also permitted of the same "circumferential creeping." The court accordingly held that a mere difference in the nature of materials employed did not render the Parsons patent tenable, and therefore reversed the judgment of the lower court. The opinion delivered through Judge Grosscup is as follows:

The advantages claimed for the patented device are thus stated by counsel, repeated in the opinion of the court below:

"The construction of the device by which it is loose on the wheel and free to travel circumferentially around it when in action gives several important results referred to in the patent. In the first place, the 'freedom to travel' adds very materially to the anti-slipping qualities of the device, in effect continuously laying down on the round in front of the tire 'a non-slipping medium,' consisting of a series of loose cross chains, under conditions affording a maximum of

traction results. In the next place, it prevents the disintegration of the rubber tire, which, as suggested in the patent, in all other proposed constructions had proved a fatal obstacle to the use of a metal traction device on a rubber tire. Again, it prevents the inevitable and objectionable 'slowing' of the tire in action, which occurs where metal traction plates or similar parts are incorporated in the tire."

In holding that what Parsons did required invention, the court below says:

"It is true, and clearly disclosed by the evidence, that circumferential creeping, or what Parsons calls traveling around the wheel by the action of rolling contact, was not new with him as a practical result, but he was the first to claim and fully utilize it, and understand its significance in the art. It is the inevitable law of the rolling wheel. It is even difficult to keep the tire itself from creeping forward on the rim. This tendency has been well understood from the time of the bicycle. And when an anti-slipping device is put on the tire, however firmly, it will travel around it. All other inventions, however, conceived the notion that this circumferential creeping was a detriment, and must be prevented in order to get traction and prevent slipping. Parsons was the first to understand that this motion was beneficial, that the best traction would be given by utilizing it, as well as the best form of anti-skidding. He therefore reversed the prevailing idea that this motion must be prevented as much as possible, and specified a loose grip, 'merely suspended on or engaging with the wheel, but not fixed thereto—free to travel around it.' He also contrived a novel means of carrying his idea into practical application, that is, by a loose grip, held upon the tire by side-members of sufficiently less diameter than the tire to securely retain the device in place. Neither of these things had been done before. This is not an attempt to patent a function, result, idea or abstraction, but a new conception and new embodiment of that conception, producing an improved result, useful in itself, and commercially successful. It is entitled to liberal treatment, both as to anticipation and infringement."

The chief question in this case is, was what Parsons did, patentable invention?

There are a number of patents in the record (Patents Nos. 595,099, E. H. Graves, Dec. 7, 1897; 667,457, E. C. Rehfeld, Feb. 5, 1901; 135,128, D. W. Kellogg, Jan. 21, 1873, and others.), known as metal traction devices, substantially like the patent in suit except that they are relatively narrow, intended to be placed upon the tread of a deflated tire and held in position on the tire by the tight inflation of the tire; that is to say, the radial pressure of the wheels. Of course, this pressure contemplated that there should be no movement of the bands around the wheel. They were, in this respect, different, both in underlying principle and in construction, from the patent in suit; nor would they have answered, we think, for automobiles (they were devised for bicycles), where the strain is hundreds of times greater than on a bicycle. But they point out and illustrate the prior use of metal for an anti-skidding band.

There are also a number of patents in the record (Patents Nos. 98,126, R. W. Thomson, Dec. 21, 1869; 567,245, J. H. Lowrey, Sept. 8, 1896; 639,846, J. Coan, Dec. 26, 1899; British patents Nos. 3,046, Archer, 1871; 14,719 Rose, 1898, and others.), known as metal armors or jackets. But all these devices were constructed with the idea of rigid attachment to the tire. The tendency of these devices, in common with all

other devices, to creep, is not the "freedom to travel" that Parsons sought. They are incapable of freedom of circumferential travel.

Patent No. 681,173, however, issued August 20, 1901, to Maxim & Bardwell, for a detachable traction strap, shows a construction precisely like the Parsons construction, except that in the Maxim & Bardwell device the material used is leather, while in the Parsons device the material used is metal; and except, also, that provision is made in the Maxim & Bardwell patent whereby some of the transverse straps may, or may not, be lengthened, so as to pass around the felly of the wheel. That this last difference is meant to be optional, is shown in the description, wherein it is stated that provision for such attachment "may" be made, and also in lines 52-53 and lines 60-61, wherein it is stated that "when" that means is adopted, it is preferable to locate them at given places. Let metal be substituted for leather, the Maxim & Bardwell device becomes the Parsons device.

The determining consideration in the mind of the court below, in favor of the Parsons device as patentable invention, was that Parsons was the first to understand that circumferential creeping, instead of being detrimental, was advantageous, both to the best traction and the best form of anti-skidding device. Assuming this to be Parsons's concept, and his device the mechanical embodiment of that concept, the question arises, is the concept anticipated? The metal traction bands do not anticipate it, for the reasons already stated; but none the less, they are examples of metal being used, as a band or chain, in anti-skidding devices. Nor do the metal armors or jackets constitute a prior embodiment of the Parsons concept. At most, they are examples only of the use of metal as distinguished from other material, just as are the metal traction bands, in anti-skidding devices.

But with the Maxim & Bardwell patent the case is different. Whether Maxim & Bardwell consciously conceived that circumferential creeping was a help rather than a hindrance, we have no means of knowing from their patent. But that this circumferential creeping was in their patent, we do know. Their device embodies this concept—is different from the Parsons embodiment of the concept only in the fact that one uses leather and the other metal. The concept, therefore, is present in the Maxim & Bardwell patent, however unconscious they may have been respecting the advantage given to their construction by its presence. The question of patentable invention, then, comes down to this: the Parsons concept being found in a previous device, performing there the same function that it performs in the Parsons device, is the substitution of metal, by Parsons, for leather in Maxim & Bardwell, patentable invention? We think not. The adaptability of metal to the purpose named, is clearly apparent in the prior art. The possibility of metal being used was contemplated by Maxim & Bardwell, for they say: "An objection has been found to the use of traction devices composed of metal having yielding or springing qualities, from the fact that that part of the device coming in contact with a rubber tire is apt to cut the latter * * *." That Maxim & Bardwell were mistaken in the disadvantages they assigned to metal, or the advantages they assigned to leather, subtracts nothing from the fact that their construction, in the determining matter of circumferential creeping, embodied the Parsons concept. In

the light of the record, Parsons's thought must have been this: "Maxim & Bardwell have found that circumferential creeping is not a disadvantage. The prior art shows that metal may be used instead of leather. The use of leather has made the Maxim & Bardwell device commercially useless. I will take that device, but instead of using leather, will use metal." This, as already stated, does not seem to us to be patentable invention.

The argument is made, however, that the Maxim & Bardwell device was not commercially operative. Mechanically, of course, it was operative—the circumferential creeping being, perhaps, less rapid than where metal was used. True, a substitution of one material for another, in a device mechanically operative but commercially worthless, may be invention. But it is not necessarily so; and, for the reasons already stated, it is not, in this instance, in our judgment, invention. To the extent that this argument is used to show that, within the meaning of the patent law, it cannot be an anticipation because it is not operative, it fails; for mechanically it is operative. To the extent that it is used to maintain the patentability of the chain, it fails for the reasons already named. To hold otherwise, it seems to us, would be to adjudge that a party is entitled to a patent for first defining to the world the physical law upon which a device, to be operative, must act. This is not the law.

The decree of the Circuit Court is reversed and the cause is remanded, with instructions to enter a decree dismissing the bill for want of equity.

Fintze Retires From Ball-Fintze Company.

The Ball-Fintze Co., the Newark (Ohio) jobbing house, has been reorganized and reports that \$50,000 additional capital has been put into the business, which will permit of enlargement and greater aggression. In the process of reorganization James Fintze, the vice-president and sales manager, has retired from the company, and has been succeeded by A. E. Caldwell; E. F. Ball, however, remains as secretary and treasurer. Concurrently the branch store, previously maintained in Cincinnati, has been discontinued and the stock removed to Newark.

Dominion Motors Goes Into Liquidation.

B. J. Fox has been appointed liquidator for Dominion Motors, Ltd., of Walkerville, Can., which last year was organized to build a car called the Dominion and of which A. J. Kinnucan, formerly of Detroit, was general manager. The action followed the filing of a petition for a receivership by the Lewis Spring & Axle Co., of Detroit, which petition was withdrawn when Dominion Motors, Ltd., agreed to go into voluntary liquidation. Among other things disclosed by the proceedings was the fact that Kinnucan and E. W. Wynans were to receive \$50,000 in stock if successful.

Dunhams to Build Bodies in Newark.

D. V. Dunham & Sons are about to engage in the manufacture of automobile bodies in Newark, N. J. A plant for the purpose will be erected at Central avenue and Fourth street.

IN THE RETAIL WORLD.

James Harmison will occupy the garage which is being built on Cranston avenue at Fowler, Cal. Its dimensions are 40 x 80 feet.

The Overland Garage Co., Victoria, Tex., has changed its name to the Texas Motor Car Supply Co. It has filed the necessary certificate with the state authorities.

The Burk Automobile Co., Chattanooga, Tenn., has taken over the garage of the Tennessee Motor Car Co. in that city. The structure is located at the corner of Seventh and Chestnut streets.

The Midwest Motor Supply Co. has leased the building 554 West Jackson boulevard, Chicago, including the garage in the rear thereof. The structure has four stories and a basement.

The Quality Tire Co. has been organized in Chicago and has taken over the Premier agency at 2329 Michigan avenue. W. E. Stalnaker and the Premier Motor Mfg. Co. itself are jointly interested in the new concern.

William R. Cunningham, who has been identified with the automobile trade in the West for several years, has engaged in the business on his own account in Des Moines, Ia. He has secured the state agency for the Hupmobile.

Frank G. Carrie, who at one time was manager of the Haynes branch in New York and who at present is engaged in the sale of second-hand cars, has filed petition in bankruptcy. His liabilities are \$2,124, and he swears that he has no assets.

The Manufacturers' Selling Agency, of which G. L. Mahannah is general manager, has commenced business at 209-211 Walnut street, Des Moines, Ia. The concern has the Central Iowa agency for the Krit, Imperial and Richmond cars.

The Gates City Auto Co. and the Fargo Auto & Supply Co., of Fargo, N. D., are about to take possession of the new building which has been erected for them at the corner of N. P. avenue and Fourth street. It is a two-story structure which will be equally shared by both concerns.

The Ebann & Beringer Auto Co., successors to the Buick Motor Co., of Utica, N. Y., are building a two-story addition 35 x 75 to their garage and salesroom at 12-14 Burnet street. The addition will be fire-proof and be marked by an entire absence of posts.

Fred G. Becker and C. S. Hammond have organized the Becker Motor Car Co. in Oakland, Cal., where they will handle the Stoddard-Dayton car. Becker is an experienced automobile man, having for years been a member of the firm MacIvor & Becker, agents for the Columbia and Maxwell cars.

The General Motor Car Co., of Philadelphia, which previously existed as a private

ownership, has become a corporation under the laws of that state. William P. Herbert, who previously conducted the business, is president of the new company, which will continue at 229 North Broad street.

Changes Among Prominent Tradersmen.

Andrew J. Pierce, formerly of the Pierce Motor Co., of Racine, Wis., is about to sever his connection with that company. It is stated that he likely will become associated with another automobile concern.

Thomas J. Hay, manager of the Ford Motor Co.'s branch in Chicago, has had the Indianapolis branch of that company added to his jurisdiction. He will spend several days of each week in the Indiana city, which is his old home place.

O. C. Hutchinson, for several years identified with the Thomas B. Jeffery Co., of Kenosha, Wis., and who had charge of the Rambler branches, has resigned to join the staff of the Welch Motor Car Co., of Detroit, of which he will become sales manager.

Otis R. Cook has been appointed sales manager of the Consolidated Rubber Tire Co., of Akron, Ohio. Until recently he occupied a similar office in the Federal Rubber Co., and for many years previous thereto was with the Goodrich sales staff.

L. M. Bradley, publicity manager for the United States Motor Co., has resigned that post to take up a similar duty for the E-M-F Co., of Detroit. He has been succeeded by M. H. Newton, a former New York newspaperman, who for some time has been connected with the United States Motor's advertising department.

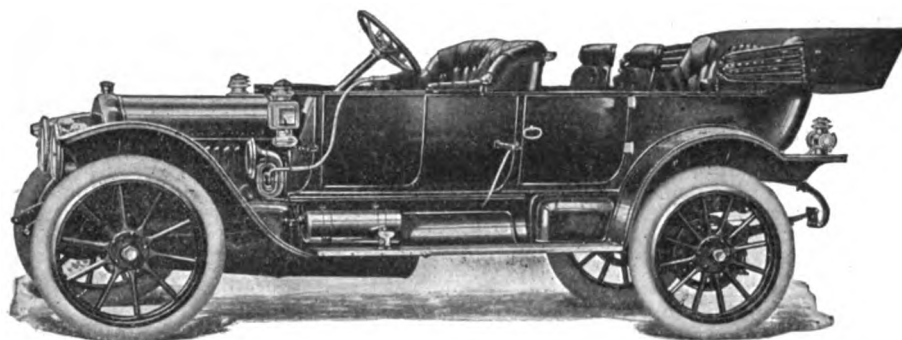
C. D. Norris, superintendent of the Studebaker Automobile Co.'s factory at South Bend, Ind., has been engaged to act as superintendent of the American Automobile Mfg. Co., which recently removed from Beatrice, Neb., to New Albany, Ind. It is expected that the plant in the latter city will be ready for operation before the close of the present month.

W. A. Clare, formerly assistant manager of the E. B. Van Wagner Mfg. Co., of Syracuse, N. Y., has been appointed general Eastern representative of Claire L. Barnes & Co., of Chicago, who are handling the outputs of the Van Wagner, Billings & Spencer and other factories. Clare's headquarters will remain in Syracuse. Barnes & Co. have also appointed J. H. Loveland their New England representative, with headquarters in Boston, and W. H. Hitchcock their general representative in the Central States, with headquarters in Indianapolis.

Increases and Decreases of Capital.

Detroit, Mich.—Paige-Detroit Motor Co., from \$100,000 to \$250,000.

Hartford, Conn.—Hartford Auto Parts Mfg. Co., from \$100,000 to \$200,000.



THE NEW 40-HP WHITE

THIS is the new 40-HP White car with left-hand drive (gear-shift lever at the right of the driver). It is the latest product of the Great White Factory, embodying the highest effort of this organization, unhampered by precedent, to produce the best type of American car. The most noted authorities both at home and abroad were consulted, and within the limits of human knowledge this car is the best obtainable in the engineer's and body builder's art.

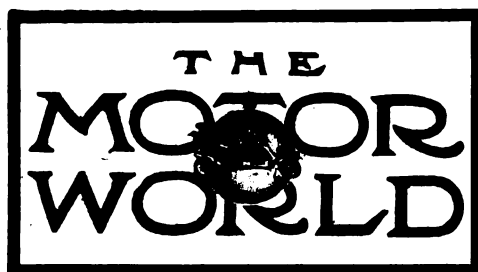
Being a totally different size, when designing this engine there were no patterns to be saved - no economies to be effected—no advantages to be gained by following precedents of our own or other factories. It is, therefore, a most striking tribute both to the design and the performance of the 30-HP car, that the world's engineers could suggest no improvement, and were unable to produce a better or more economical gasoline-driven automobile. It was found impossible to build better, so we have built larger.

The new 40 has a wonderfully graceful torpedo body, selling in the five-passenger size at \$3000.00, and in the seven-passenger at \$3200.00.

Appointments for demonstration can be made with any of our branches, or dealers in all important cities.


The White Company

830 East 79th Street, Cleveland



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The Passing of the Selden Patent.

The complacency with which the decision upsetting the Selden patent has been received by the trade has been one of the most remarkable features of the situation. There has been nothing suggestive of more than momentary and individual flurries, if there were flurries of any sort. If anyone has felt great elation or great dejection, it has not been apparent and has been confined chiefly to those most immediately involved in the proceedings. Good-natured badinage, more than anything else, has been the rule.

Perhaps if the patent were not so near to expiration things might assume a different complexion and the situation be viewed more seriously. The likelihood that the Supreme Court will consent to review the proceedings and undo the action of the Court of Appeals seems too remote for general belief.

The breath of validity left in the patent—

validity applying to an engine which practically is non-existent—scarcely is worth the breathing, and to all intents and purposes the Selden patent, has passed from the scene. It had many years of purposeful and profitable life to which it now appears it was not rightfully entitled, and that the industry, generally speaking, was bettered because of this life is not susceptible to much argument. It cannot be said that the patent was operated for monopolistic purposes. The tremendous growth of the industry and the keen competition that has prevailed at all times constitute the best refutation of such assertion whenever or wherever it may be made.

If it be held that the industry grew up not because of the patent, but in spite of it, nothing more clearly can serve to indicate what would have happened had there been no restraining influence of any kind. For while it did not serve to keep out all of them, that the Selden patent did keep out many promoters and other of the get-rich-quick gentry and check their operations before they began is well known. Viewed from this angle it was worth all it cost. It checked a flood which must have led none can say where, but the trend of which was not difficult to follow. The two at one-time opposing associations of manufacturers to which the patent gave birth was not the least of its good results. It afforded to each community an intensity of interest that without the patent must have been lacking, and both assisted in steadying the trade. Better feeling, better methods and better cars grew therefrom, and the world is that much further ahead.

Of the association that remains, the Association of Licensed Automobile Manufacturers, which was built up around the Selden patent, and whose future since its defeat has been the subject of much conjecture, it is fairly safe to say that it will take care of itself and give convincing answer to the speculation. If the collection of royalty was its original purpose, that purpose threw out so many unexpected branches of general and genuine usefulness that it would be regretful if their growth was stopped.

The famous old patent is gone. Let it go; but while it passes it is well to recall the good it left after it. And as it passes, honor must be done to Mr. Henry Ford, who finally obtained its true measure, or

at least its mechanical worth, or lack of it, after a single-handed, long-sustained battle that entitles him to all that may come his way. All the world admires the fighter who never says die, and that's the sort of fighter Ford proved himself to be.

Positions of the Control Levers.

While a certain vague sort of standardization has seemed to prevail in the arrangement of the control mechanism of the average car, the advent of the closed-front body has entirely overthrown it. Strange as it may seem, the mere effect of throwing a door or a solid partition across the opening at the driver's side has been to split the field of designers into three distinct camps, each with its several outposts. In one camp the opinion prevails that both the change gear and brake levers should go outside the body; in the second, they are brought entirely inside the body, while in the third, the emergency lever is carried outside and the gearshift inside. Instances in which the front door or side panel has been bulged outward in order to permit the levers to come inside, on the one hand, and instances in which the corresponding panel has been concaved from the outside in order to afford free action for the levers, on the other hand, indicate that, whatever the individual designer may say, it is within the range of possibility to adopt either of the two extremes.

The principle of the thing from the point of view of the driver is just this: Automobile manipulation to the practiced motorist is a matter of certain routine movements, each of which is simple enough in itself, and all of which are controlled by the brain almost subconsciously. Hence, the importance of so arranging the mechanism of control that each of the motions necessary to the operation of the car may be performed in an easy and natural manner. That is to say, any arrangement of the levers which necessitates a long reach, a cramped movement or an unaccustomed movement is objectionable. Perhaps it is not too much to say that it invites disaster.

Applying the principle to the practice of placing the levers outside the closed-front body, it is evident in most cases that the result is to place them, at least in certain positions, quite beyond the normal reach of the average driver. It entails an unaccustomed amount of labor to grasp and operate the change gear or the brake when

it is necessary to reach over what is substantially a high fence. When one lever is inside and the other outside the effect is even worse, for it so far differentiates between the motions involved in gear changing and in applying the brake that the brake lever normally is left entirely out of consideration. To engage it successfully in an emergency involves the summoning of the faculties on the instant to perform a movement which, while simple, is unfamiliar.

When the levers are brought inside the body, the effect is much the same as in the standard, better perhaps, than the old standard open type of body. Both levers are side by side, and one is as easily reached as the other. True, certain rather serious difficulties present themselves when it is attempted to mount the levers inside the body: it is unwise to cut into the frame, it is awkward to mount the segment without doing so. Where it is practically impossible to arrange the segment inside the door without cramping the operator, there remains the alternative of putting it in the center of the floor board, where it comes under the driver's left hand. While the use of such an arrangement may seem odd at first, experience has shown that it is easy to become accustomed to, particularly as both levers are within easy reach and occupy a logical position with respect to one another. Certainly it is to be hoped that before another show season the placing of the levers under the new conditions imposed by the closed-front will have been brought to a state of reasonable uniformity, for the question is an important one, and is not to be sidestepped.

"Little Old New York" can "go some" when occasion requires. On Saturday evening last the city contained no less than three separate automobile shows, each in full blast—one in Madison Square Garden, another in Grand Central Palace and the third the importers' "salon" in Hotel Astor. Three shows of the sort are just two too many.

If reversals of judicial opinions affecting patents harrow the souls of the patentees, imagine the exquisite feelings of grave, wise and reverend jurists of the "courts below" to whom the reversals convey the intelligence that though they may be grave they are not so wise as they had appeared to be!

COMING EVENTS

January 7-14, New York City—Association of Licensed Automobile Manufacturers' eleventh annual show in Madison Square Garden. Pleasure cars and accessories.

January 13, New York City—Annual banquet of the Motor and Accessory Manufacturers at Waldorf-Astoria.

January 14-15, Los Angeles, Cal.—Race meet on Los Angeles motordrome.

January 14-21, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's second annual show in the Auditorium.

January 14-28, Philadelphia, Pa.—Annual show of Philadelphia Licensed Automobile Dealers' Association in Third Regiment Armory.

January 16-21, New York City—Association of Licensed Automobile Manufacturers' eleventh annual show in Madison Square Garden. Second week devoted to commercial vehicles.

January 16-21, Detroit, Mich.—Detroit Automobile Dealers' Association's annual show in Wayne Pavilion.

January 17-18, Philadelphia, Pa.—Quaker City Motor Club's roadability run to Harrisburg, Pa., and return.

January 18, New York City—Annual banquet of the Automobile Trade Credit Association.

January 25-28, St. Paul, Minn.—First annual show of automobile dealers in Auditorium.

January 27-February 4, Vancouver, B. C.—First annual show.

January 28-February 4, Chicago, Ill.—National Association of Automobile Manufacturers' tenth annual national show in Coliseum. Pleasure cars and accessories only.

January 28-29, Oakland, Cal.—Race meet on Oakland motordrome.

January 30-February 4, Troy, N. Y.—Troy Automobile Club's show in State armory.

February 6-11, Chicago, Ill.—National Association of Automobile Manufacturers' tenth national show in Coliseum. Pleasure and commercial cars, motorcycles and accessories.

February 6-11, Buffalo, N. Y.—Annual show.

February 13-18, Washington, D. C.—Second annual show in Convention hall.

February 13-18, Winnipeg, Canada.—Winnipeg Motor Trades Association's show.

February 13-18, Kansas City, Mo.—Motor Car Trade Association's show in Convention Hall.

February 14-18, Memphis, Tenn.—Memphis automobile dealers' first annual show in the Auditorium.

February 14-18, Dayton, Ohio—Second annual show in Memorial building.

February 18-25, Binghamton, N. Y.—Annual show.

February 18-25, Minneapolis, Minn.—Minneapolis Automobile Show Association's annual show in National Guard Armory.

February 18-25, Newark, N. J.—New Jersey Automobile Exhibition Co.'s fourth annual show.

February 18-26, Brooklyn, N. Y.—First annual show of Brooklyn automobile dealers at 23d Regiment armory.

February 20, Cleveland, O.—Show in Central Armory.

February 20-25, Baltimore, Md.—Annual show in Fifth Regiment Armory.

February 20-25, Cincinnati, O.—Cincinnati Automobile Dealers' Association's show in Music Hall.

February 20-25, Hartford, Conn.—Hartford Automobile Dealers' Association's fourth annual show in Foot Guard armory.

February 20-25, Omaha, Neb.—Third annual show of the Omaha Automobile Show Association in Auditorium.

February 24-27, New Orleans, La.—First annual show of New Orleans Automobile Club at Fair Grounds.

February 24-25, Keene, N. H.—Consolidated Motorcyclists' third annual motor-vehicle show.

February 25-27, New Orleans, La.—New Orleans Automobile Club's annual Mardi Gras race meet on Fair Grounds track.

February 25-March 4, Toronto, Canada—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

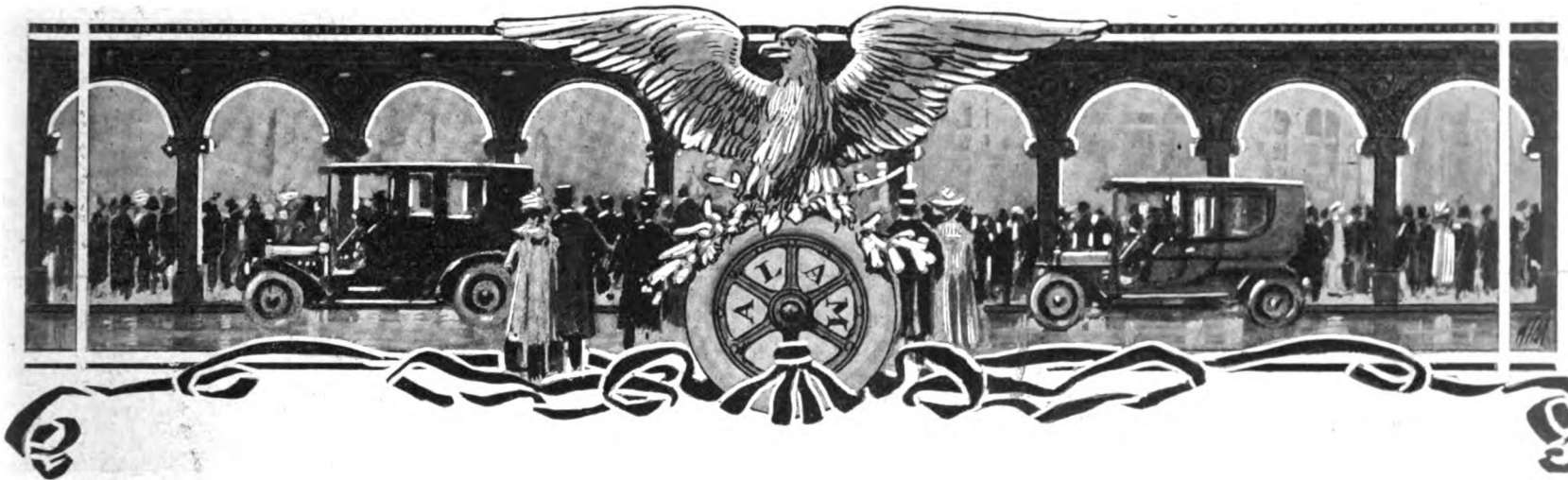
March 11-18, Cleveland, O.—Manufacturers and Dealers' Association's show in Central Armory.

March 14-18, Denver, Colo.—Annual show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

April 1-8, Montreal, Can.—Annual show in Coliseum.



The "Great White Show" and What It Holds

It's a great show, all right—probably the greatest show of any sort that ever was staged in Madison Square Garden. Each year, when the Association of Licensed Automobile Manufacturers has surpassed its previous efforts in evolving settings and surroundings for a public display of motor cars, it seemed that the limit of decorative achievement had been reached, and that the fund of adjectives could not be further drawn on. But that the eleventh automobile show to be held in New York's famous building and the sixth in the line of A. L. A. M. effort is truly deserving of the much-abused adjective "great," there cannot be much disagreement.

It is not difficult to find an apt designation for it: It is the Great White Show.

There is nothing cheap nor tawdry nor theatrical in the decorative treatment; that is, so far as concerns the main hall, from which the entire exhibition obtains its character. It is bright, clean, wholesome and pleasing, both to the eye and to the senses, and the scheme of decoration—a latticed garden, is carried out with greater regard for detail than ever before. The latticed effect is given to even the ticket seller's booth in the lobby and to the great clusters of lights in the dome of the building itself.

Entering the lobby from the street one passes beneath an overhead lattice hung with wistaria and walks into the great white latticed garden beyond. It is like passing into a flood of noonday sun. The decoration does not require much description. The snow-white lattice work rises from floor to dome in three great circular terraces, so to speak. The white is relieved only by the carpeting, by the many hued automobiles and by the unobtrusive signs of green on which the names of the overhead exhibitors are successively displayed on backgrounds of white. Some skilful designing was required to make room for the thirty-odd descendants of the late and

sometimes lamented American Motor Car Manufacturers Association, who during the previous year "got religion" of the Selden brand and who therefore were admitted to membership in the Association of Licensed Automobile Manufacturers, but the designers and architects proved equal to the



THE MEN OF THE SHOW

Alfred Reeves, General Manager A. L. A. M.; Col. George Pope, Chairman Show Committee; M. L. Downs, Committee Secretary

task, and the manner in which the several galleries were extended to obtain the necessary room is not short of wonderful.

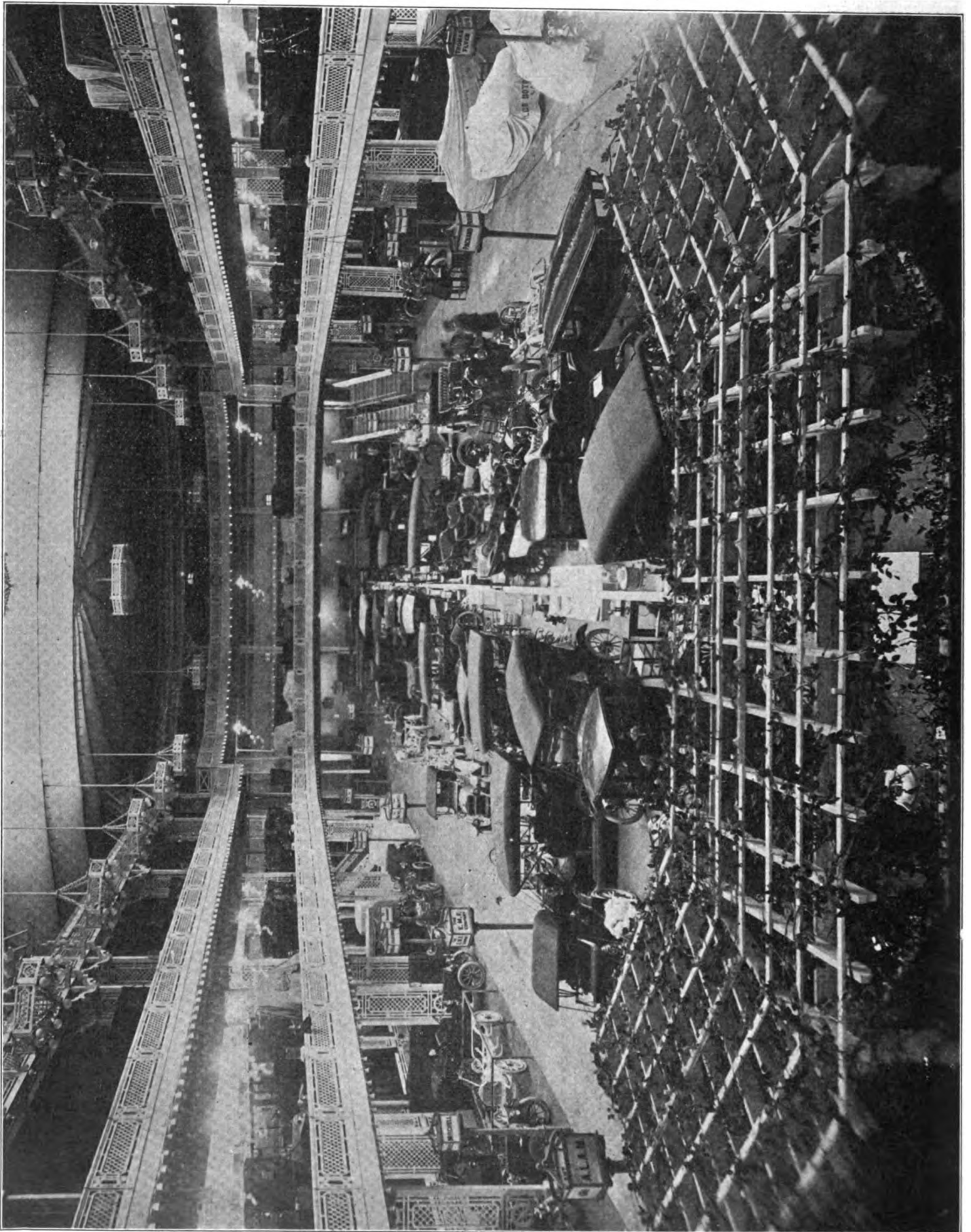
What may be styled "scenic effects" are more pronounced in Exhibition Hall adjacent to the arena, and in the concert hall upstairs. In the former, which holds about a dozen exhibits of notable cars, there is an overhead lattice hung with wistaria, the four walls of the room being hidden by large paintings of landscapes and water-

scapes, which when viewed from the proper angle suggest that the wistaria garden is overlooking the scenes. The concert hall, which is given over to parts and accessories, has been transformed into a rustic bower. It is all limbs and boughs and green bunting and contrasted with the great white show immediately outside suggests twilight instead of noon. The big basement does not afford much scope for decorative treatment, but plentiful use of white bunting and electric lights has converted a usually gloomy place into a clear and cheerful and busy mart; for mart it surely is. The long rows of accessories and what-not and the clatter of tongues make the basement appear almost a beehive of industry.

Of course the current week's display of pleasure cars constitutes only Part I of the show. Part II, business vehicles, will occupy the boards next week. Also as a matter of course, there are many names on signs and lamp posts that never before emblazoned sign or lamp in Madison Square Garden. Brush and Buckeye, Dayton and Hupp and Inter-State, Jackson and Kissel, Maxwell, Mitchell and Moline, Premier and Pullman, Regal and Reo, and Speedwell—all these are names new to Garden shows. They are among the "recruits" of the twelve-month. Doubtless it merely is a flight of imagination born of the surroundings, but it does seem as if the very products to which the names are attached have become bettered by their associations. Obtaining entry to the Garden show has a meaning of its own not unlike that which an actor attaches to a Broadway engagement. He considers it equivalent to having acquired a reputation, which perforce he must thereafter live up to.

The names that long have been linked with the show—Pierce and Pope, Columbia and Cadillac, Franklin and Haynes, Stevens and Stearns, Olds and Locomobile, White

GENERAL VIEW OF THE "GREAT WHITE SHOW" IN MADISON SQUARE GARDEN





THE ENTRYWAY TO THE "GREAT WHITE SHOW;" THE WISTARIA-HUNG LOBBY

and Winton and all the others that stand for so much in the industry, lose nothing by their increased companionship. There is room enough and honor enough for all. In passing, it may be remarked that the metamorphosis of the productions of these veterans of the trade has been not short of remarkable. They have expanded each year until now their original runabouts appear merely mechanical toys. Size and elegance and impressiveness have been increased each year until it would now appear that the effort can go no further.

The imposing limousines of even twelve months ago no longer appear so imposing; they have been almost dwarfed by the double-limousines or so-called Berlins, of which there are a number of notable examples at the current show. They are absolutely compelling in their proportions, they are magnificent in their design and finish, they are positively regal in the refinement, the luxury and splendor and elegance of their appointments. They are almost literally private drawing rooms on

wheels. In respect to beauty and unobtrusive elegance, for instance, it will be difficult to surpass the Stevens-Duryea double limousine, which forms a part of that exhibit. It is a glorious harmony in blue. There are several shades of it, the sides in a light blue, gently striped, the hood and under body in dark blue, the upholstery in still another shade of the same color and they all blend so harmoniously as to remove the obtrusiveness that comes of great size. There are, too, Stoddard-Dayton double limousines, each of the same general type but differing slightly in size and body design. They too are rich and sumptuous and worthy rivals of the Stevens-Duryea creation. One, the so-called Sedan, is finished in black with maroon sides; the other and larger car is in black with gray sides; the Sedan in particular appears to catch the eye of womankind. There is a Knox and one or two other double limousines finished wholly in black, and they undoubtedly are fit to rank with the others, but so large are these

cars and so extensive is the display of plate glass windows, that it is to be feared that black unrelieved by a cheerful tint gives to them such suggestions of the funeral coach that a relieving contrast is far more necessary than is the case with single limousines or open cars.

Undoubtedly the most picturesque vehicle in the show is the Pierce-Arrow George Washington coach. For the past several years the Pierce-Arrow people have made the show an occasion for disclosing an unusual vehicle of the sort, and the George Washington structure is thoroughly in keeping with their previous efforts. It is like and yet unlike the double limousine, being a huge body mounted on a six-cylinder, 60 horsepower Pierce-Arrow chassis, and it perhaps suggests the landaulet rather than the limousine. It is finished in dark green, with red striping, colonial scenes painted on the door panel giving the Washington touch to the car, for certainly George Washington never dreamed of such

a coach as this. The upholstery is of pig-skin and the appointments are luxurious to a degree, including a dome electric light, a folding lavatory and other conveniences. There is a huge trunk rack on the rear, of course, and other storage compartments are arranged in the running board, in which a perforated trough is also provided for the spare tire. A step opens and closes as the door itself is opened and closed.

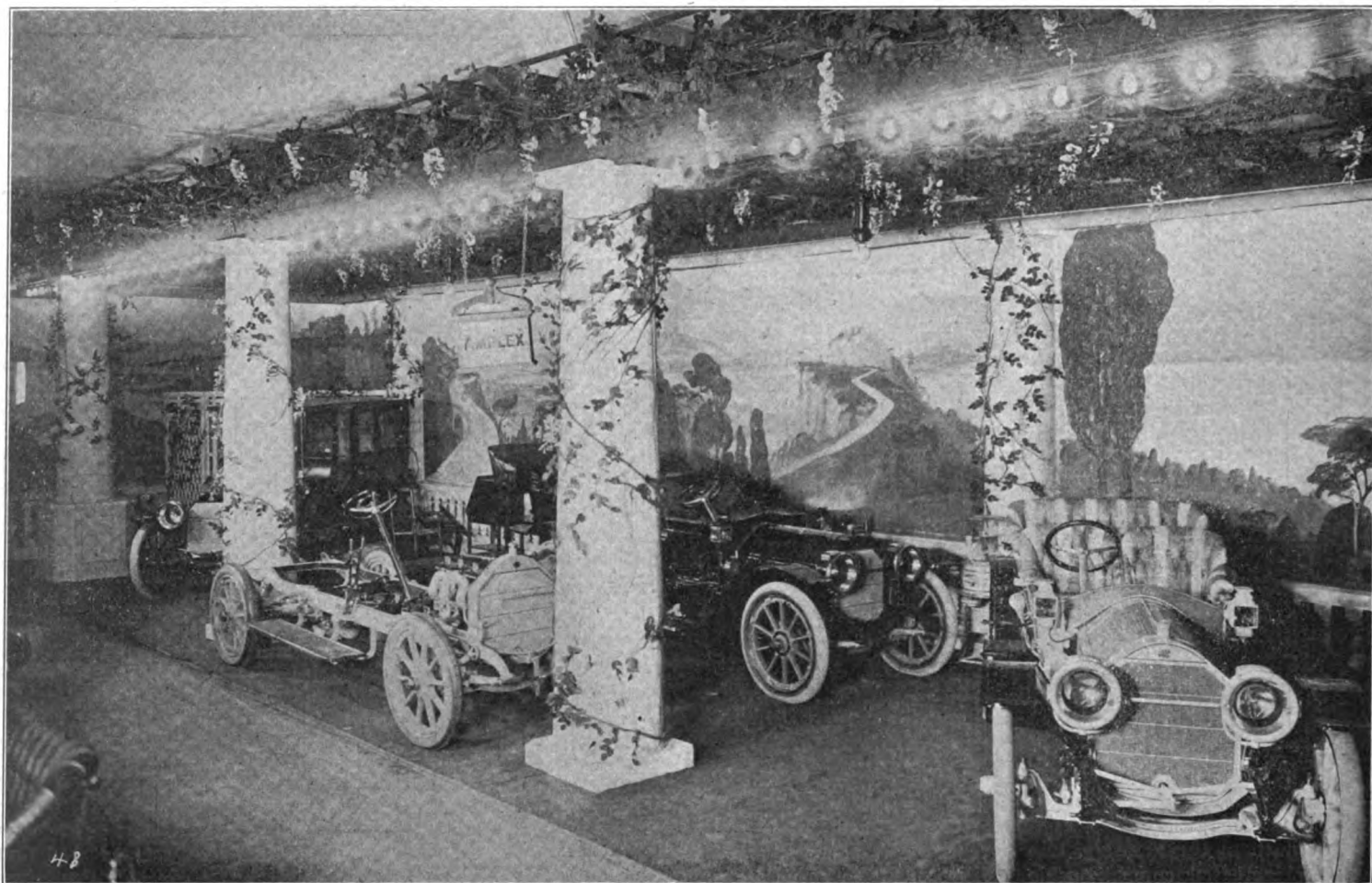
Although naturally much smaller than either the double limousine or the George

Stevens-Duryea finished in peagreen and a "little Hupp" in baby blue are unusual finishes which contrast strongly with the bolder colors.

White, although not so unusual, but yet a shade which throws a car into strong relief and adds to its clean-cut appearance, is employed on several models, among them a Winton, a Locomobile and a National roadster, the latter with two oval tanks on the rear platform having a distinctly "deadgame" appearance.

the rear deck imparts a chic appearance which commands instant notice. It is the runabouts, however, that are most improved in appearance by the use of doors. It lends to them more character than they ever had before, and assists in removing that suggestion of dinkyness which often has been remarked.

The grays of yesteryear have increased in popularity. There are more of them in evidence than ever before, broad stripings of white and black being equally divided.



SHOWING THE SCENIC EFFECTS IN EXHIBITION HALL AND THE AMPLEX EXHIBIT

Washington coach, the Chalmers exhibit includes a striking closed car, a coupe, which someone has dubbed a "joy car." It has a rounded roof, and in flaming red and yellow finish it fairly speaks for itself. Another "screamer" is a Franklin touring car finished in fire alarm red with black doors and fenders, the black and red effect being carried even to the lamps, which are of black with red stripes. An all red Premier, wholly devoid of striping or other contrast, is another striking vehicle, as is a Knox touring car finished in oxblood with red upholstery. A yellow Thomas and a yellow Matheson, the latter with heavy black striping, are among the eye-catchers, as is the canary-colored Speedwell "Duck Boat," with a three passenger body suggesting the term applied to it. A

The manner in which the employment of front doors alters the appearance of even familiar cars appears more striking when the various types are gathered under one roof. It causes the touring cars to seem longer and more substantial, while it imparts to two-passenger roadsters and runabouts a smartness that is not to be denied. Of these roadsters, a Columbia, finished in gray, which is on exhibition, is a good specimen. This particular Columbia is made with a torpedo back which is hinged, thus affording a rear compartment in which a trunk is stored. None, however, is smarter than the Haynes roadster, which is finished in white with black striping and in which the controlling levers are brought inside the door. The white finish, coupled with an oval tank and a trunk on

The display of show chassis and engines is unusually large and unusually impressive, preference for polished and painted finishes being evenly divided. The Interstate engine is a beautiful example of show finish, as is the Locomobile motor on which the piping is gold-plated. There are a number of working models, including the Reo, Oakland and Elmore, but none is so complete as the Stevens-Duryea's demonstrating model, which not only shows the operation of the engine but of the gears and oiling system also.

There also is in evidence a notable display of silverware—"trophy of the chase." The Vanderbilt cup itself is there, on the Alco stand, but it, like all other displays, is dwarfed by comparison with the number and character of the cups shown by Nor-

dyke & Marmon. They have selected only their larger trophies, and there are enough of them, and they are so large as to make plain that automobile racing has set a new standard, even in the trophy line.

Few accessories lend themselves to picturesque display or picturesque demonstration. It follows that from the spectacular standpoint there is little that is striking in the parts or accessory departments, although what can be done in that respect is well illustrated by the Hess-Bright exhibit in the rustically adorned Concert Hall; it occupies the whole stage or platform, and by arranging highly pol-

ished Hess-Bright ball bearings on several large frames which constitute the background, the show-goer is compelled to look and admire, whether or no. The glitter of the big displays of Solar and Gray & Davis lamps of itself attracts attention to such exhibits, but it is the makers of ignition apparatus who are able to make the most of their opportunities. There are magnetos and plugs of heroic size at both the Splitdorf and the Eiseman booths, and at these and the Bosch, the Simms, the Atwater-Keen and other exhibits sparks are snapping day and night; at the Splitdorf and Bosch stands, in fact, anyone can make his

own sparks, both being provided with rows of magnetos fitted with hand cranks, the turning of which makes the spark fly.

In respect to attendance, the current Garden show is like all previous Garden shows. Since the doors opened Saturday evening last, the building has been crowded at all save meal hours. In the evenings the crush has been uncomfortable, requiring that one move with the tide of humanity. Tuesday evening, which was styled "Society night," and when the admission fee was doubled, the throng was as great as during the preceding nights, and not even Wednesday's rain could keep the multitude away.



It is a thing to impress the observer, and judging by appearances one that the show clearly marks, that the closed-front car is the car of the future. Practically without exception the manufacturers whose products are on view have essayed the closed-front in one form or another. In some instances, it is true, the effect is rather impromptu and unsatisfactory—almost as though the front doors had been hastily assembled and the dash finished off just before the cars were crated for shipment. In others the really troublesome problems involved in the design of the closed-front car have been worked out with evident forethought and care.

It is difficult, for example, to shape the lines of the hood and the lines of the body structure in such a way that they may join at the dash without giving offense to the eye. The abrupt appearance of some of the touring cars is broad evidence of this difficulty, and the abruptness in some cases is only half-hidden when a windshield has been added. In other cases the effect is decidedly pleasing, and so nicely wrought out that the observer is entirely unconscious that any such problem could have existed in the mind of the draughtsman. Of such are many of the torpedo, or near-torpedo bodies, with their rounded cowl or skuttle dashes and their neatly mounted windshield effects.

Another problem, which has been given a variety of solutions, is that of placing the levers. The mechanical side of the difficulty is presented by the designer's very rightful objection to cutting away a portion of the frame flanges in order to make room for the change gear lever directly inside the door. The simplest way around it, of course, is to leave the levers alone, bring the body inside them and let the operator stretch and contort himself in such

ways as his anatomy may require in order to reach and manipulate them. A method which, in the estimation of many designers is preferable, is to place the brake and gear shifting handles in the center of the floor board. This arrangement has the advantage that the connections to the brake linkage and gearset are much more readily and safely accomplished than in any other way, while the system has the added advantage that the entrance to the car from both sides is absolutely free.

As a means of getting around the difficulty of placing the levers close inside the door on the right hand side of the car, several instances are to be found in which strong steel brackets are employed. In others the segment is placed entirely above the frame line, while in still others the brake and gear levers are separated slightly, the effect being most unsatisfactory, inasmuch as it results in cramping the driver not a little. Equally objectionable would seem to be the practice of placing one of the levers inside and the other outside of the body, as is done in quite a number of cases.

But at all events, the show is a show of closed-fronts, even more generally than last year's show was a show of torpedos. The effect is carried out even in limousine construction, several such bodies being observable in which the driver is penned in by low and modish front doors. The employment of the double limousine, or Berlin body, also is increasing, as, it would seem, rightfully should be the case, as the demand for cars de luxe increases.

Another thing which cannot fail to impress even the most casual observer of this, and previous shows, is the growth of the spirit of liberality among manufacturers in the matter of equipments. For example, it hardly can be said that the use of the

magneto is increasing, viewing ignition practice in the light of what may be seen at the shows. Last year a very large proportion of the cars on view were magneto equipped. Now, however, though the percentage of chassis boasting this feature may not be very much greater than it was a year ago, it is noteworthy that in a majority of cases magneto equipment is standard—not optional—equipment. And this tendency is observable not in the larger cars only, but throughout the entire range of powers, sizes and prices.

Another gain in the matter of stock equipment which may be said to be one of the really significant features of the gear, is the gain in electric lighting equipments. Here, it would seem, the industry has reached about the point that it occupied one, perhaps two, years ago in the matter of magneto ignition. Almost any manufacturer now is willing to equip his cars with electric lights, if the purchaser so desires. Quite a number of them have made electric lights a standard feature. One or two even have gone the length of providing means for mounting some form of electric dynamo, several makes of which now are available.

But whether the electric lamp is standard or extra equipment, it is certain that a full lamp equipment of some sort now goes with almost every car in the show, while a majority of them also are liberally outfitted in other respects, even including demountable rims, a few with tops, and many with windshields in addition to the usual miscellany that looks so well in the catalog, and which no longer is merely nominal in practical value, as so frequently used to be the case.

As far as mechanical tendencies are concerned, the industry has swung so gently, so persistently and so thoroughly into line

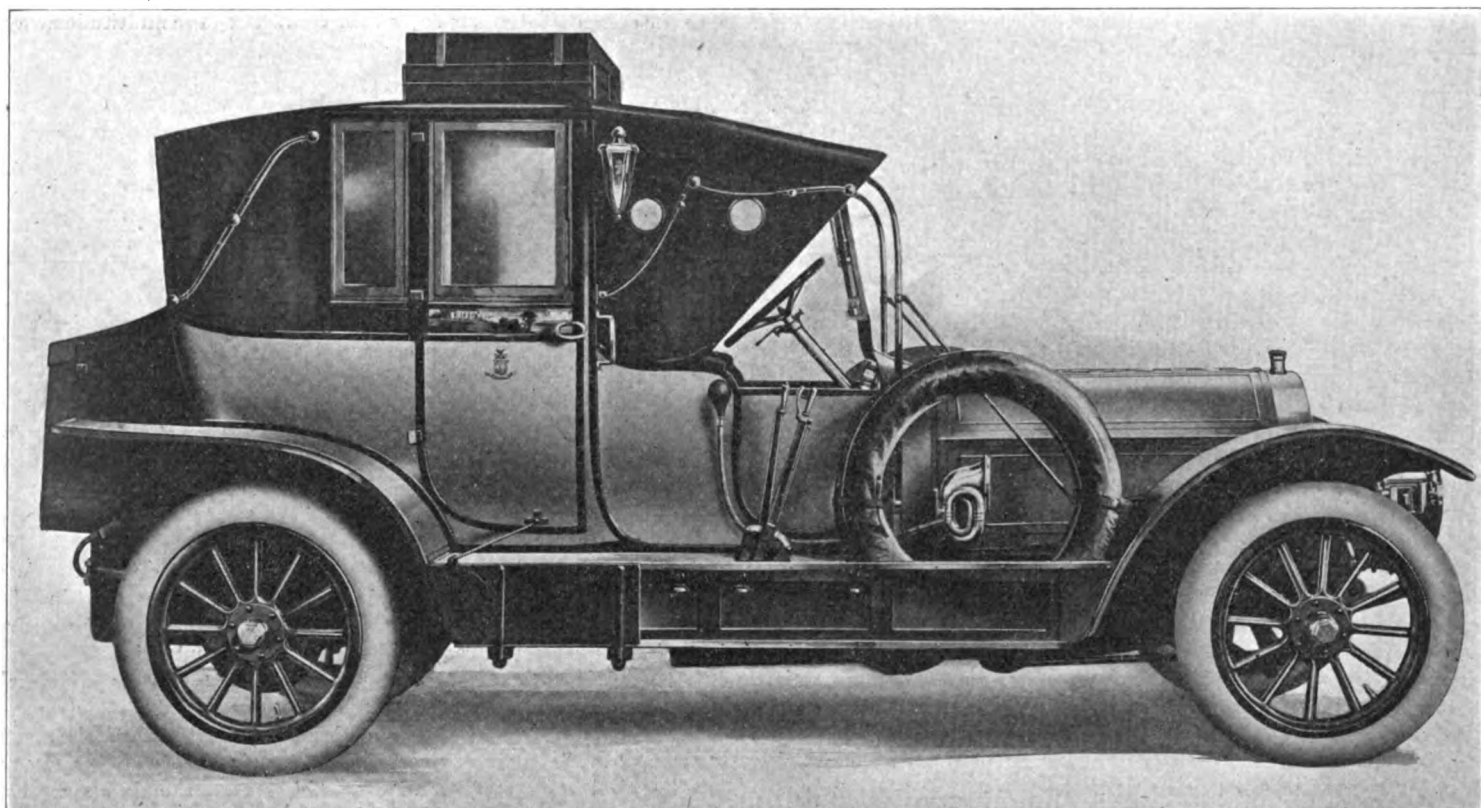
that sweeping changes no longer are in order. Such general alterations in practice as are revealed by averages, now require a cycle of years rather than months to become apparent. Suffice it to say that the four cylinder motor constitutes by far the bulk of present day engine construction, those having a greater stroke than bore, and hence, loosely termed "long stroke motors" predominating; that double, or, rather, dual, ignition prevails; that the self-contained pump method of lubricating the engine is most prevalent; as are the se-

construction, the air-cooled motor and full-elliptic springs all around render the chassis extremely light in proportion to their power output. This, together with the use of unusually large tires in proportion to the load carried, renders them correspondingly long-lived and comfortable.

The cooling system, which has been slightly modified this year, now is so arranged that the entire engine becomes accessible as soon as the bonnet is raised. To this end the diaphragm which divides the engine space into two compartments is

complete circuit for the travel of the gases to prevent them from being upset by surging action. The new six-cylinder carburettor is equipped with an automatic extra air intake, while the Bosch dual ignition system now is a standard feature.

A novel feature of the new-style bodies shown, which are of the closed-front type, it is almost needless to add, is that the dash lamps, which are electric, are inlaid in the dash, only the convex faces of the lenses being visible in front. Directly below the lamps are a series of ventilating orifices,



MOST PICTURESQUE CAR IN THE SHOW—THE PIERCE-ARROW GEORGE WASHINGTON COACH

lective sliding gearset with three forward speeds, the shaft drive and the hub brake. The "battle of the clutches" continues, and practice seems to be almost evenly divided between the disk and cone types. Wheel bases and tire sizes have increased somewhat, but mostly on the smaller and medium-sized cars—there is no indication that very large wheels and very large tires are in future prospect. In general, the real story of the movement in design is best told in the description of the individual exhibits, what they are and what alterations they represent as compared with the exhibit of 1910.

Appearing for the first time with the so-called "Renault" type of bonnet, the new Franklin cars are conspicuously good looking, not only in general effect, but in their suggestion of easy riding qualities. The general details of Franklin construction remain unchanged and as exclusive as formerly. The principles of laminated wood frame

built partly on the engine itself and integral with the "chimneys" or open ended jackets surrounding the cylinders, and partly on the hood itself. When the latter is closed, the two join to form a sealed partition separating the upper and lower compartments. Into the upper space air is drawn from the grill in the front of the hood, whence it passes over the radial and vertical fins on the cylinders into the lower compartment under the draught induced by a centrifugal or "squirrel-cage" type of fan which forms a part of the flywheel.

The new oiling system consists of a pressure feed lubricator mounted alongside the motor, which feeds the crankshaft and connecting rod bearings through a duct in the crankshaft, thus accomplishing perfectly uniform distribution. The inlet and exhaust valves now are placed side by side in the cylinder heads, instead of concentrically, and, in the 48 and 38 horsepower, six-cylinder models and the 25 horsepower, four, continuous intake manifolds, which allow a

which are closed by a brass door on the inside of the body. While the bodies shown at the Garden are of the touring and runabout type, a very neat and attractive little 25 horsepower coupe-landaulet with left-hand drive, fully equipped for town-car service de luxe, is exhibited as a sort of supplement to the show in the lobby of a 42d street hotel.

While the general structural features of Pierce-Arrow cars remain much the same as during the past three or four years, it is noteworthy that in two of the three sizes in which this very exclusive six-cylinder product is built, a slight change in the direction of the long-stroke motor has taken place. Thus comparing the specifications of last year's motors with those of the models now current, the 36 horsepower engine has been increased in stroke from $4\frac{3}{4}$ to $5\frac{1}{8}$ inches, the bore remaining four inches; in the case of the 48 horsepower model, the stroke has been increased from $4\frac{3}{4}$ to $5\frac{1}{8}$

inches, while the bore is $4\frac{1}{2}$ inches, as before. The 66 horsepower chassis, however, is equipped with an engine of $5\frac{1}{4}$ by $5\frac{1}{4}$ inches bore and stroke, which is the same as was used last year. Save for such minor alterations as the introduction of idler pinions in the two-to-one gearing of the engine, the use of a metallic housing for the wiring of the two independent ignition systems, the use of an internal gear coupling for direct drive in the gearset instead of a claw clutch, and a slight increase in the size of the brakes, the construction of the cars is unchanged.

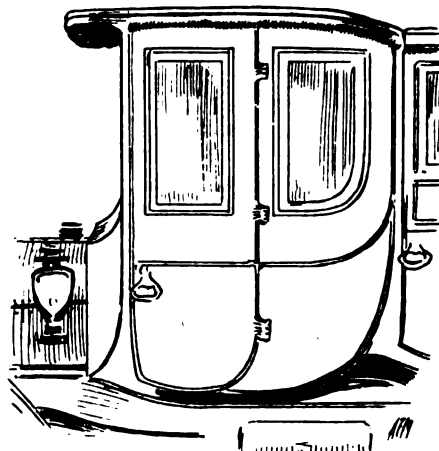
One of the proudest points in Pierce-Arrow construction is the engine oiling system, which employs a capacious reservoir on a level with the cylinder heads, together with gravity feed to the bearings. The overflow from the bearings is filtered and drained to a well, from which it is pumped to the reservoir to be used over again. One of the principal advantages of the system is that the feeding is independent of pump action, within limits, so that the operator would be warned of difficulty through the falling of the indicator on the dash in the improbable event of the pump being rendered inoperative, long before there was danger of the bearings being starved. Other excellent features are the large diameter cone clutch, with cork inserts, the engagement of which is regulated by an interlocking device which prevents the clutch from seating unless the gears are fully meshed; the method of suspending the motor from the main frame by means of heavy channel section steel girders which are bolted to the crankcase, the placing of a glass window in the side of the carburetter to facilitate adjusting the float level and the use of a positively driven air compressor for pumping tires as a stock feature.

Although for many years Locomobile practice has been restricted to certain lines which have rendered the cars of that well-known and pioneer mark more or less distinctive, though in no sense radical, recognition of the prevailing demand for products of the high-class order this year is apparent in the production of the new six-cylinder model. This is the first six to be built by the Locomobile Co. of America, likewise it marks the final abandonment of the double chain drive and also of the make-and-break system of ignition. The new line, which is represented conspicuously at the show in a specially finished chassis, in many respects is a continuance of principles hitherto applied only in the 30 model, which was, and is, the standard four-cylinder product.

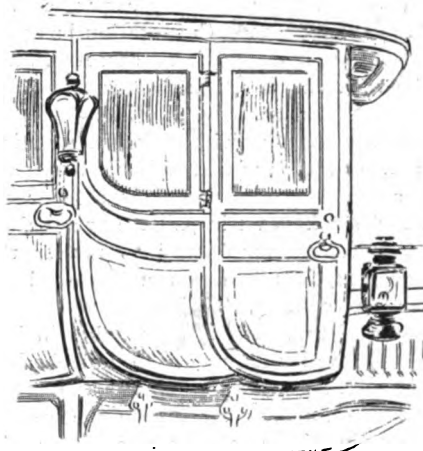
The new motor is of T-head construction, nicely drawn and having large valves and manifolds, as becomes a smooth working engine. The carburetter, specially developed for this model, is of the perforated standpipe pattern, which, as the fuel rises

in the standpipe under the influence of increasing suction, gives much the effect of the multiple jet carburetter, without the latter's complications. The primer connec-

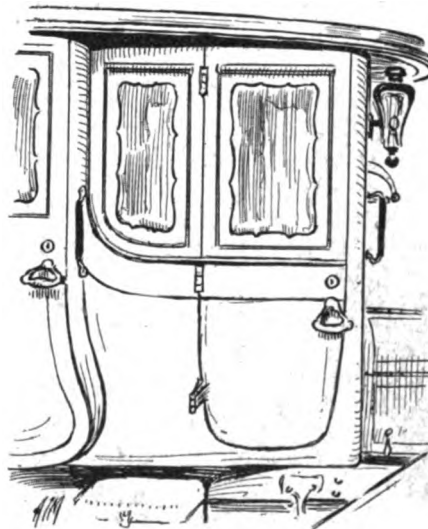
STYLES IN DOORS AND LAMPS



STEVENS-DURYEA



WINTON



KNOX

tion and a connection for varying the tension of the spring on the auxiliary air valve are led up to the dash in order to obviate the necessity of raising the bonnet, save for cleaning or making very unusual adjustments. The magneto, which is

a part of the Bosch dual system, is carried on the right of the motor alongside the carburetter, while only the water circulating pump is mounted on the left. Following the very excellent practice which has been carried out in all Locomobile designs for a number of years, the upper section of the crankcase is cast in bronze instead of aluminum, and in addition to the four supporting arms which carry the motor, the base casting is webbed outward to meet the frame sills. The engine oiling system is unique in that all piping and connections are made outside the case, no dependence being placed on drilled or cored passages in effecting the distribution.

The gearcase also is cast in bronze, and the gearset, which is of the selective pattern, is much the same in design as that which has been used on the 30 model. The clutch on the new models, however, is of the enclosed multiple disk type. The rear axle construction is original and exclusive in that the radius rods, which are of very heavy construction, also carry the brake anchors. The propeller shaft is fitted with two universals, and the torsional reaction is absorbed by a plain bar. The seeming lightness of the chassis construction, particularly of the axle and its connections, is explained by the fact that very high-grade steels are employed in this fabrication.

A line which has been broadening very rapidly during recent years is that of the Dayton Motor Car Co., now a unit in the big United States Motor Co. This year the array is rendered so extensive by the addition of the Stoddard-Dayton 20, formerly known as the Courier, though so closely related to the product whose name it now bears, that two distinct and separate exhibits are necessary in order to stage it. In the booth in the second balcony, where the Stoddard-Dayton 20 line appears, is also the Stoddard-Dayton 30, which may be described as next larger in size. The exhibit on the main floor is given over entirely to the larger and more elaborate products.

The latter display in particular is graced by a striking example of the bodymaker's art in the form of an inside-driven sedan coupe, which is equipped for four passengers. There are but two doors, which are placed at the front of the body. The result is that ample space is left back of the doors for a very large and long window on either side, rendering the body extremely well lighted, and lending to its exterior somewhat the effect of a luxurious Pullman coach, an effect which is heightened by the sashless drop windows in the doors. The front seats are of the swivel type, and either may be swung out of the way in entering or leaving the machine. The closed-front style of body shown is equipped with doors on both sides, entrance to the right being rendered possible by the position as-

signed to the brake and change-gear levers. The desirable clean dash effect has been secured by removing from sight everything except the gasoline and oil pressure gauges and the kick switch and starting button of the Bosch ignition system.

While retaining their characteristic valve-in-the-head motor, with independent camshafts and push rods, and the very compact form of selective change gear which has been used heretofore, the 40 and 50 horsepower models have been increased to 120 and 130-inch wheelbase respectively, in order to accommodate the larger new bodies. The 50 car also is produced on a 120-inch base for roadster and runabout body arrangements.

The 30 model, which now has 114-inch wheelbase, is of different construction to the extent that it is equipped with an L-type of motor, the valves being actuated from below instead of from overhead rocking beams. The change gear system on this model also is mounted on the rear axle instead of in the waist of the chassis. The "20" car is propelled by a block type of motor in which compactness of design has been achieved by embodying the exhaust and intake manifolds in the main engine casting, and also by adopting the thermo-syphon system of cooling. In its light runabout form this model is particularly attractive, while the touring roadster, as it is called, is built with a tray body with hinged rear gate and demountable rear seat, and so contrived that it is capable of serving a useful purpose as a utility machine.

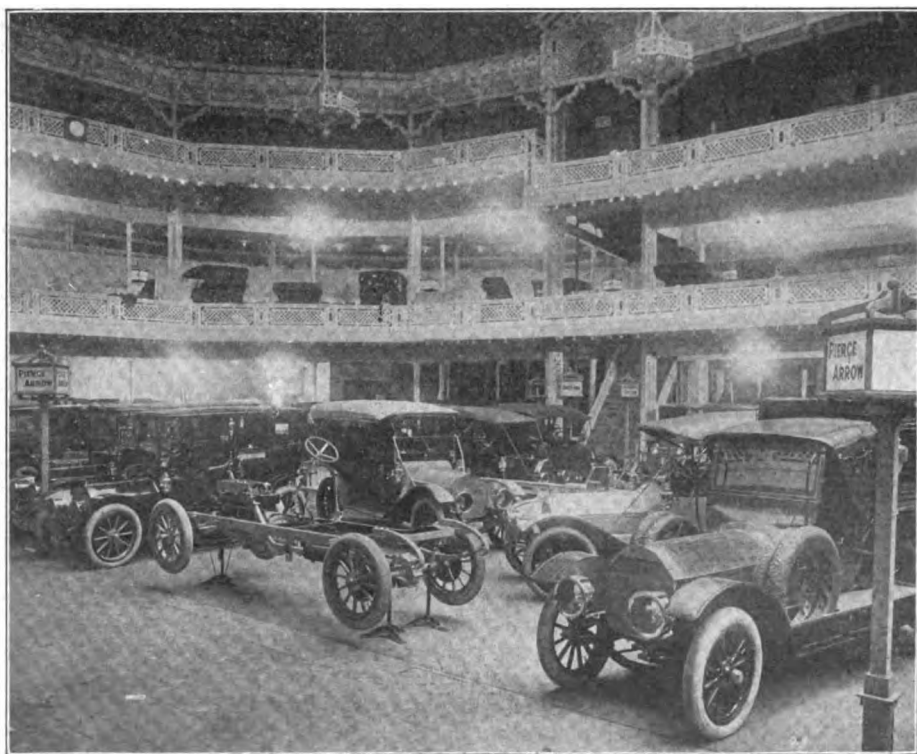
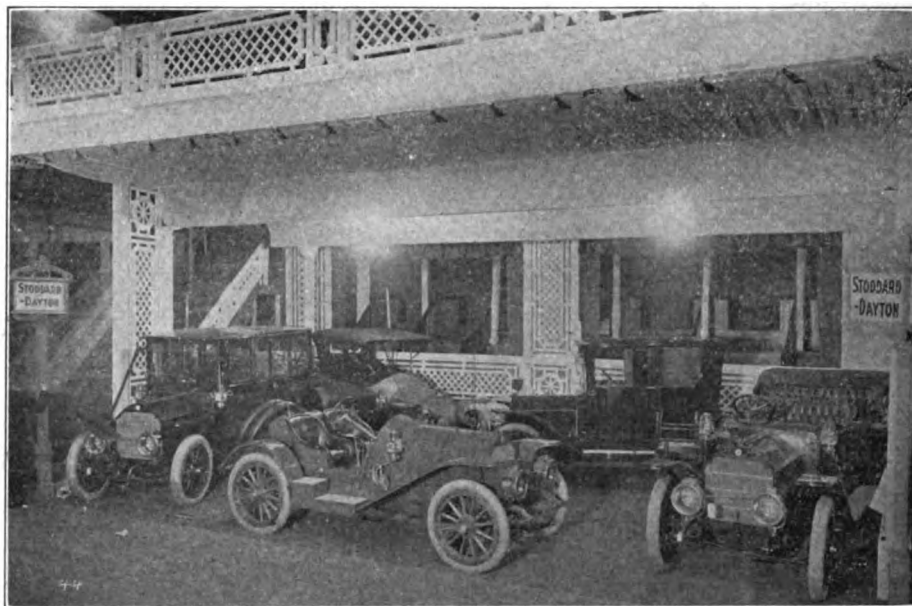
Of the three Corbin models which now are made, the new 40 chassis, which is ex-

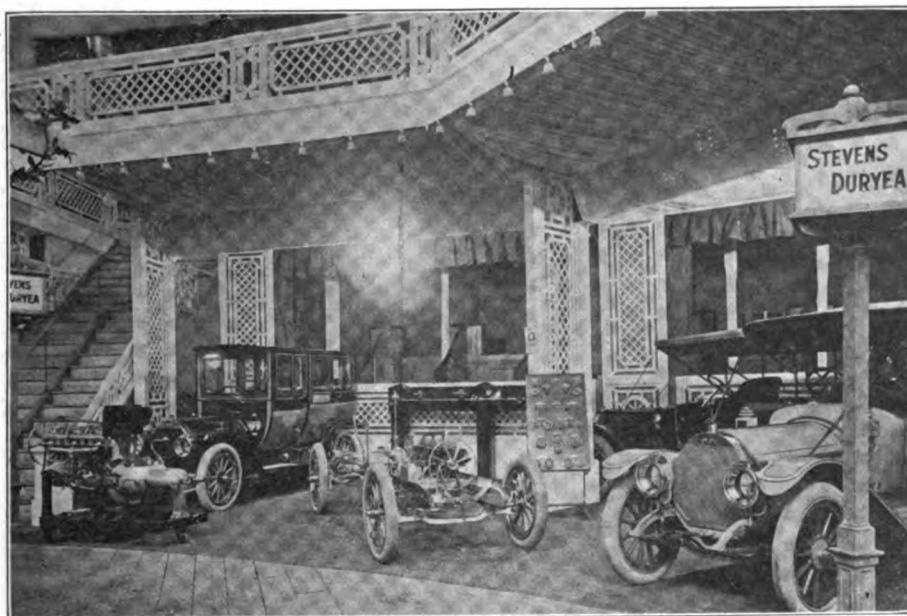
hibited in special show finish, is in many respects the most promising car which the Corbin Motor Vehicle Corporation has produced in the course of its career, which, by the way, dates well back toward the beginning of the industry. Differing in several points from previous Corbin practice, the new 40 motor is of the T-head pattern, with cylinders measuring $4\frac{3}{4} \times 5\frac{1}{2}$ inches, bore and stroke, cast in pairs. Large valves and manifolds should tend to render the engine exceptionally free running, while in respect to cooling, lubrication and other important features, it is thoroughly in line with approved design. Two independent ignition systems are employed, the spark plug being mounted over the inlet valves, one set in the caps directly above the

valves and the other at an angle looking into the pockets over the valves. The gearset is a trifle out of the ordinary in that its position in the car is reversed, the high-speed clutch coming at the rear and the reverse in front. The full-floating rear axle is of the solid pressed-steel type, made in two sections, which are autogenously welded together.

The 30 model also is new this year, being a slight variation, structurally speaking, on last year's model 18, but built to sell at a lower price. It has the L-head form of engine, with cylinders independently cast, a strong frame flange construction for supporting the full length of the crankcase on the main frame. Its wheelbase is 115 inches, as compared with 120 for the models 18 and 40, which is one of the chief points of difference between the two smaller chassis.

Few changes are apparent in the Palmer & Singer cars, the distinctive "T" head motor with large valves and double jet carburettor remaining the same as heretofore. The features of multiple disk clutches and four-speed selective transmissions also are retained, though on the four-cylinder, 40 horsepower and six-cylinder, 60 horsepower models the clutch now is separate from the transmission, and is contained in the fly-wheel. Direct drive on fourth speed instead of on third also applies on these two models but remains the same on the others. Consistent with Palmer & Singer policy in offering a large range of choice, a new model styled the "40-50" has been brought out to meet the demand for a high power motor with four cylinders. Except for a difference in size, this motor is almost identical with the six-cylinder, 60 horsepower motor and the distinctive Palmer & Singer earmarks prominent in the other models. Longer wheelbases and larger tires are among the changes in the older models, two of which are shown. They are a six-cylinder, 40 horsepower limousine and





a six-cylinder touring car. The new four-cylinder, 50 horsepower model is shown in a torpedo type touring car. Conservative body design is apparent in all the cars in which little room was found for novelty.

Marked improvement is evident at the Inter-State exhibit. While the cars of that name compared favorably with other cars of similar price, they have ascended the social scale, so to speak, and now present an appearance of refinement that is not to be gainsaid. Improvement in details, a better finish and finer upholstery constitute the principal changes in the 40 horsepower models which retain the "L" head motor. It is in an addition to the line, the Inter-State 50, that the most important departures have been made. The "50," which is furnished with closed-front touring body, with a seating capacity for seven passengers, is new throughout. The motor is a radical departure from the former "L" head type used in Inter-State cars, and is of the "T" head type, with cylinders $4\frac{3}{4} \times 5\frac{1}{2}$ inches. Motor and transmission, though separate units, are suspended at three points, the third point being in front in each case. Ignition is by two separate and distinct systems, a U. & H. high-tension magneto and storage battery and coil operating through two sets of plugs. The oiling system is unique; it is operated by a rotary pump in the crankcase, which feeds the oil from a reservoir on the dish directly to the main engine bearings, the overflow maintaining a constant level in the crankcase. Thoroughly up-to-date practice includes the use of improved helical timing gears and camshafts carried in eccentric bearings to allow of perfect adjustment of the gears. Three-speed selective transmission is used and is carried on imported annular ball bearings as is the full floating rear axle. A noteworthy feature is the brakes, both of which, service and emergency, are large and fully

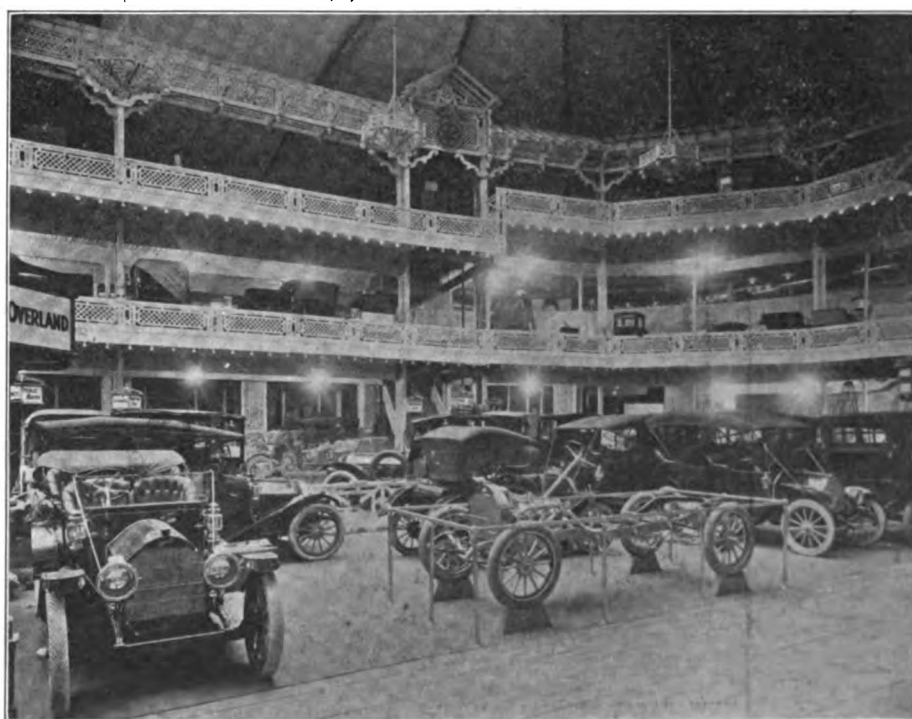
encased for protection. Electric side and tail and tail lights, demountable rims, top, windshield, speedometer and clock, tire irons and gas tank are regular equipment.

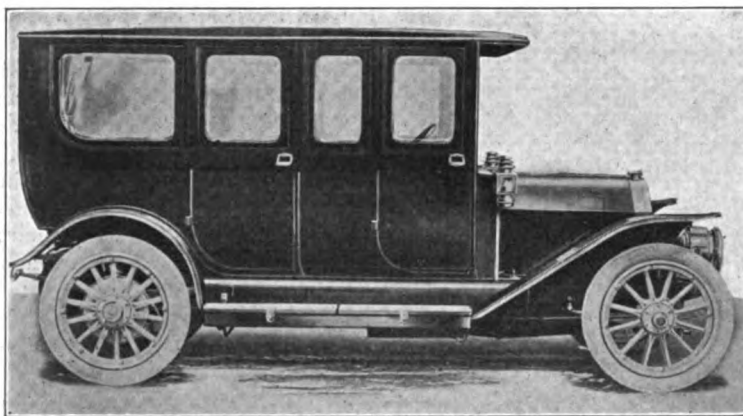
Stearns cars belong to the order of impressively constructed machines, in which the individuality of the designer is plainly evident. This applies equally well to the smaller and larger of the two models, but is rendered apparent at the show in the case of the 30-60 car, which is the model chosen for presentation, in the form of a typical show chassis. Special points to be noted in connection with the engine are the heavy formation of the upper section of the crankcase, which also forms the bedplate for the power unit and the ingenuity with which the pump and gear

housing, bracket for mounting the magneto and self-contained oiling system have been worked out. The latter, it may be observed, has been slightly altered, and now has an improved sight feed connection. The method of supplying the carburetter with gasoline by pressure from the tank in the rear of the chassis to a small supply tank on the dash and by gravity from that point to the float chamber is retained. But a new form of metal tank or jar has been adopted for the dash, which no longer is housed in a wooden box. The dry-plate type of disk clutch and enormously heavy rear axle, in which the differential case is surrounded by an I-beam girder, the axle being trussed to the torque tube by means of diagonal stay rods, are retained.

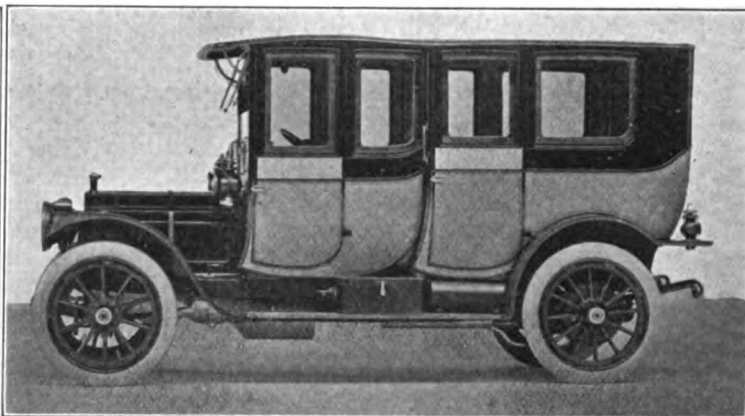
In addition to a good example of the little-known park Victoria phaeton, several standard closed-front touring cars, the exhibit is graced by a particularly attractive little coupe-landaulet of the inside driven variety, which is conspicuous among vehicles of its class by reason of the fact that its solid frame extends almost to the back, thus affording ample room for a broad-drop window on each side, and so giving plenty of light to the interior.

While the majority of designers continue to adhere to the casting of engine cylinders with the heads integral, there are certain advantages in the use of separate heads which are obtainable in no other way. The Knox Automobile Co. is one of the few companies whose product is built in this fashion. As the cylinders are cast separate as well, it follows that uniform castings are readily obtainable and that the engines, once put in service, are readily accessible for purposes of overhauling. Another point which assists in simplifying

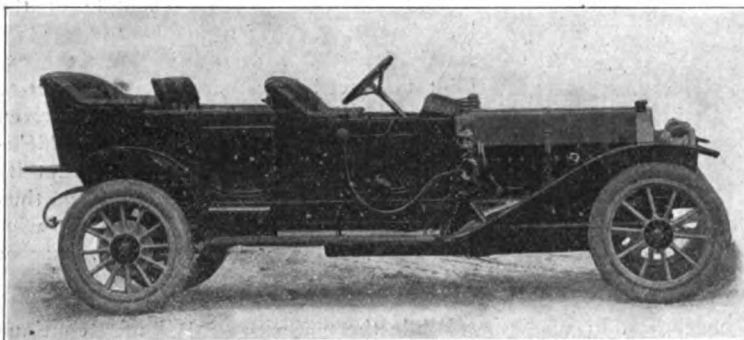




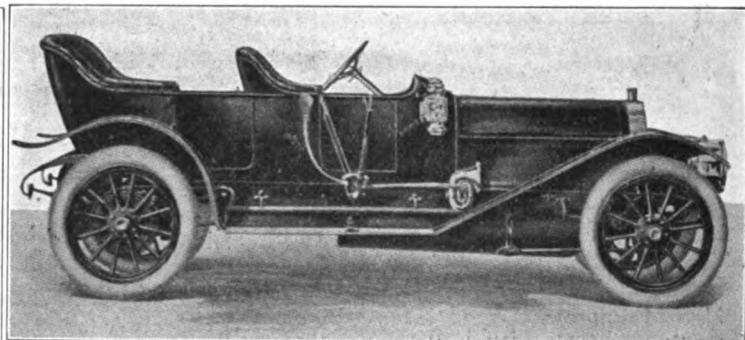
STODDARD-DAYTON "50" LIMOUSINE



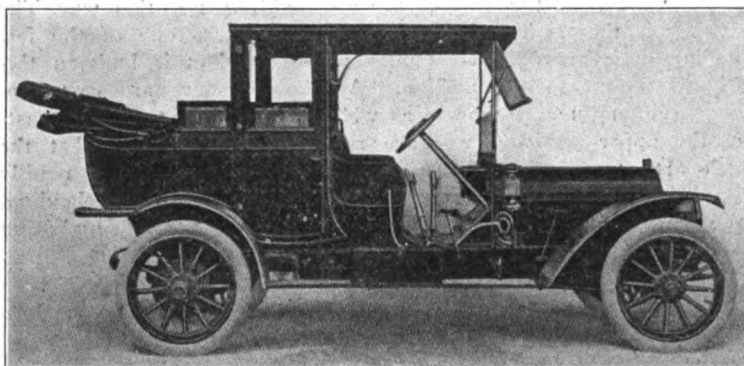
PACKARD "30" FORE-DOOR LIMOUSINE



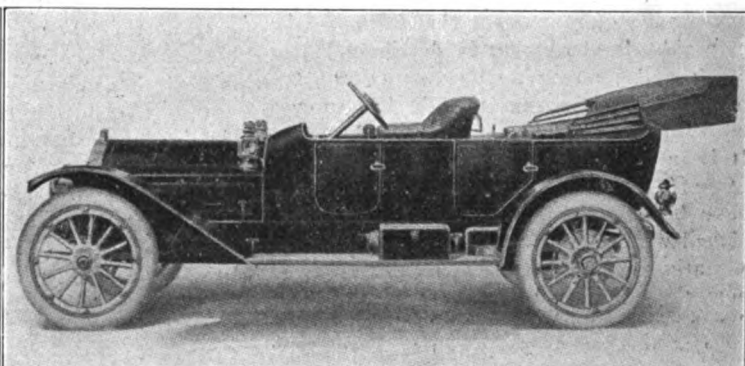
PREMIER FRONT DOOR TOURING CAR



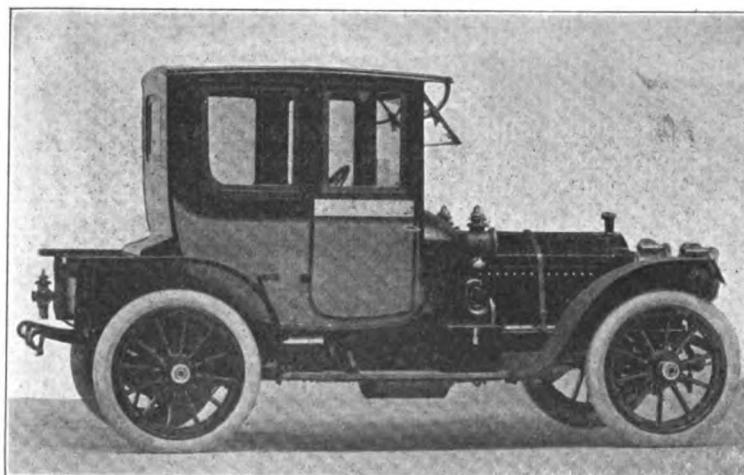
PIERCE-ARROW PROTECTED TOURING CAR



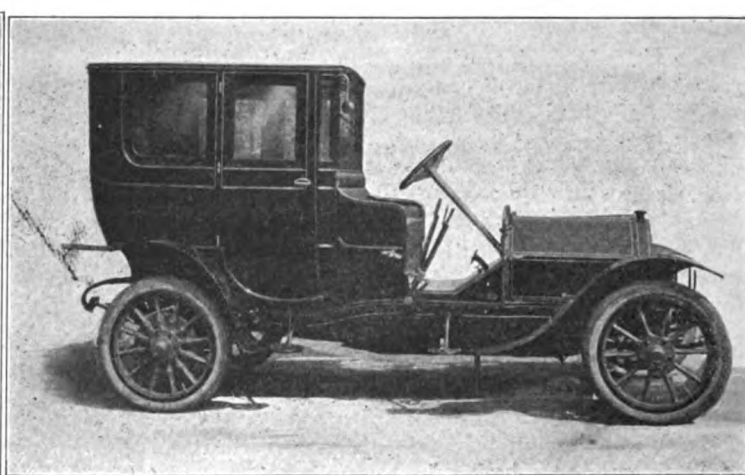
STEVENS-DURYEA "A A" LANDULET



STEVENS-DURYEA TORPEDO



NEW PACKARD "30" COUPE



PALMER-SINGER FOUR-THIRTY BROUGHAM

the cylinder casting is the fact that the valves are mounted in the heads.

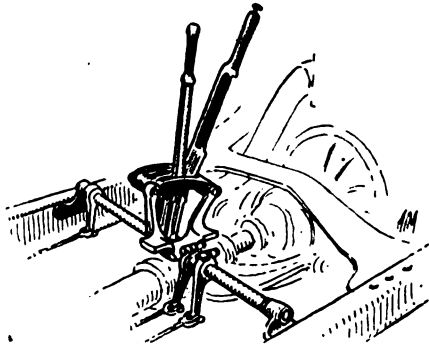
Other original features are the three-plate clutch design, which the Knox company was one of the first to employ, the straight line drive under normal conditions of load, and the unit type of power plant. In this the two rear supporting arms of the crank case are faced off to receive corresponding arms which are formed on the front of the gear case for the purpose of upholding the latter. As the brake and clutch pedals are carried on the main bed casting, it follows that the system is complete in itself. One of its characteristic features is the remarkably short length of the shafts in the selective gearset. This arrangement has been improved this year by the addition of two annular bearings, bringing the total number used in the case up to seven. The four cylinder model has been increased in wheelbase and subjected to a few changes of like import calculated to increase its size and capacity. The six cylinder model remains practically unchanged from last year. The new body designs are in the prevailing mode and rather impressively built.

A distinctive feature of the numerous Overland line is that in three of its four general styles of chassis an option is given between the planetary and selective sliding types of change gear; at least this is the effect, although in one or two instances other differences are carried also by the model characteristic. For while the selective system is held in high esteem by many practiced drivers, the fact remains that the simple pedal control of the axle-mounted planetary system used on the Overland cars is not as difficult to operate, and, therefore, is frequently thought to serve the purposes of the owner-driver to better advantage.

A new point in Overland construction at this time is the placing of the levers of the sliding gear model in the center of the chassis. This, of course, is intended as a matter of convenience, where the new closed-front styles of body are used, so that entrance and egress may be had from either side. In the 40 horsepower model, which is shown in chassis form very attractively finished, by the way, the method by which this is accomplished is revealed. A special tubular cross frame member is carried above the frame side members, the segment group being mounted in the center of it, and the connecting rods running to the rear, where the gearset is mounted as a unit with the axle. The torque tube yoke is suspended from a channel section cross member set further forward and enclosing a substantial universal joint, which is of the gimbal type, with a heavy bronze ring, the joint being enclosed in a metallic housing.

The engine now is hung from three points to afford yielding support. Other modifications include the employment of a large expansion chamber at the back of the radia-

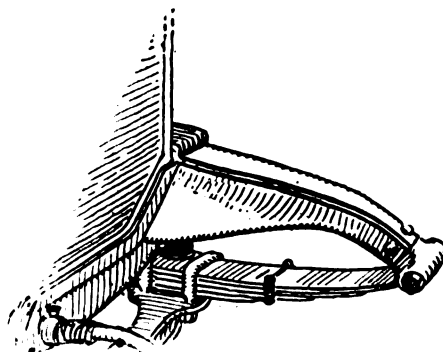
tor in order to permit the use of an ample supply of water in the thermo-syphon system. As a matter of small detail, but illustrative of the minutia of careful design, it may be mentioned in passing that the spring shackle bolts are carefully pinned to prevent them from turning over in their bearings, the precaution being necessary to prevent them from rotating, and so cutting off the openings to the grease ways whereby



OVERLAND CENTRAL CONTROL

lubricant is supplied to them from the compression cups at the ends of the pins. In developing the closed-front bodies, especially those of the torpedo form, particular success has been achieved in the difficult problem of blending the curves of the hood and dish with flat sides of the main body-work. The transmission being rendered uniform and free from the labored effect which is noticeable in some of the carriage work at the show.

The improved oiling system which has been embodied in the Mitchell line differs from that formerly employed, in that the pump is enclosed in the crank case, while the distributing manifold is mounted on the front side of the dash. The single



MITCHELL FRAME REINFORCEMENT

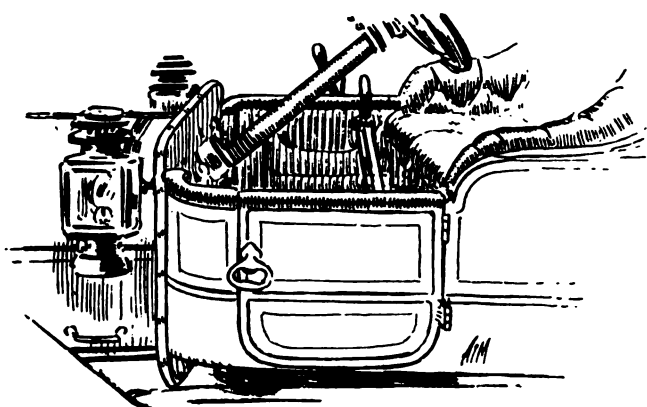
sight-feed glass which is carried in the face of the dash, enables the operator to observe the workings of the system while freeing the dash itself from encumbrance. In order further to clear the dash, the coil of the Splitdorf dual ignition system now is mounted on the frame beneath the inclined toe board. The forward section of the frame has been reinforced as a matter of precaution.

The transmission system, which is the same for both the four and six cylinder motors, is the same that was introduced a year and more ago, the gear box being rigidly mounted in line with the torsion tube and suspended from a cross frame member in front by means of heavy links which give it the necessary freedom of motion. The selective segment, it may be added, is placed in the center of the frame and directly over the gearset, instead of at the outside, as more commonly is done. The new closed-front Mitchell models are smoothly designed and are so built that the change gear levers come inside while the emergency brake levers are outside the body. Both styles of motor are of the same general design and are built with the exhaust valves mounted in the heads of the cylinders and actuated by overhead rocker arms, while the inlets are carried in offset pockets on the left side of the car.

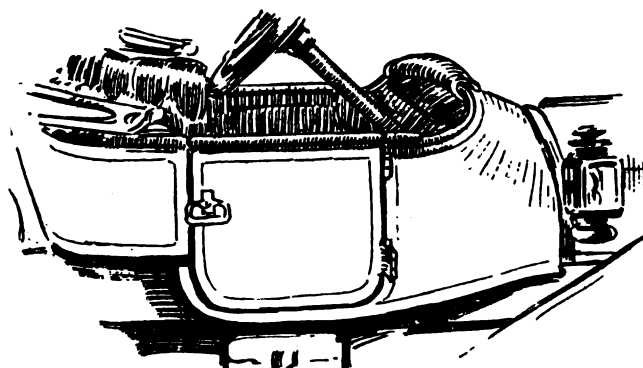
Though in many of the less expensive cars are embodied features formerly found only in the higher-priced products, few cars at \$2,000 offer the feature of four-speed transmission in which the fourth speed is an overstep, direct connection being obtained on third speed. This is one of the characteristics of the four-cylinder, 50 horsepower Kissel car, which, with two other models, forms the exhibit of the Kissel Motor Car Co. Large brakes are a feature of all the models, while those on the 50 and 60 horsepower models are noticeably so, measuring 14 inches in diameter and five inches in width. The steering cross rod has been shifted from in front of the axle to a more protected position behind it, and tire sizes have been increased on the 50 horsepower car from 36 x 3½ inches to 36 x 4 inches. One feature worthy of note is that the same rear axle of the full-floating type is used now as was used when these cars first were introduced five years ago. The frames have been changed slightly and are now made with a double drop. A foot accelerator has been added, and the design of the drive shaft changed to include a double Spicer universal joint at the rear end. Comparisons may be odious, but this is not the case with the Kissel cars, and though the six-cylinder, 60 horsepower, closed-front touring car, which forms part of the exhibit, comes in for the lion's share of attention, the two other cars, while possibly less "classy" in the estimation of the average showgoer, are worthy of close attention.

Case cars, until recently built and marketed by the Pierce Motor Co. under the name Pierce-Racine, are shown by their new sponsor, the J. I. Case Threshing Machine Co., which, in August last, succeeded the former company, and hereafter will continue to build these cars under the new name. Four cars, a torpedo model, an open touring car, a limousine and a closed-front car are shown, and the exhibit is further

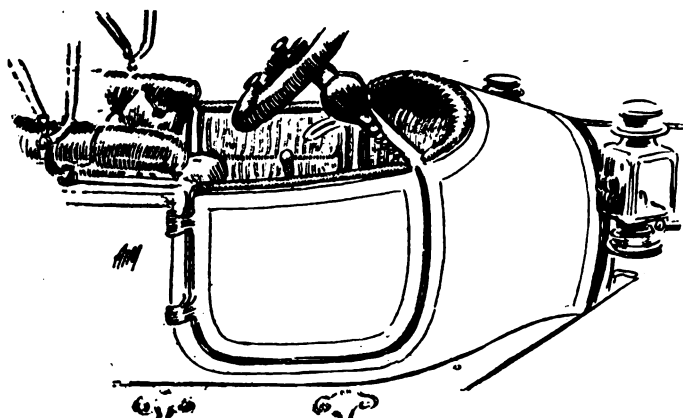
CONTRASTS IN DOORS, DASHES AND LAMP MOUNTINGS



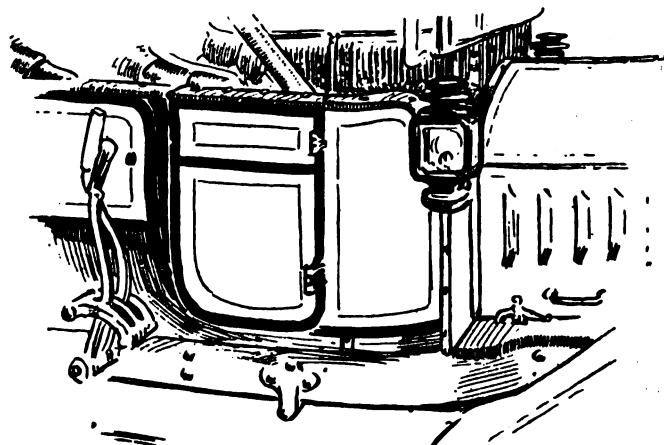
MITCHELL



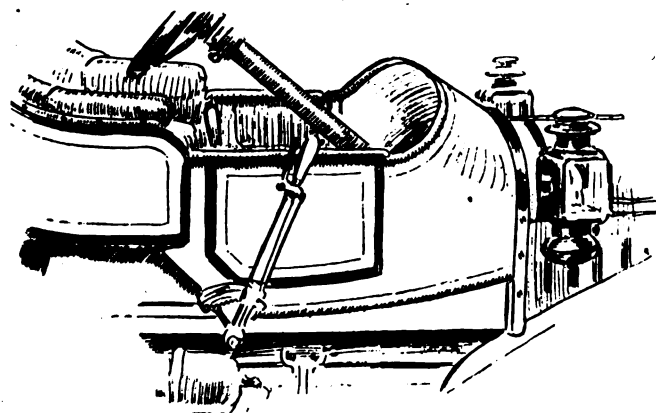
CHALMERS



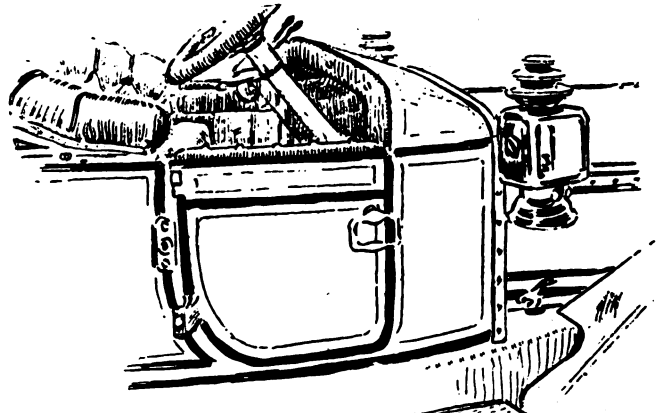
OVERLAND



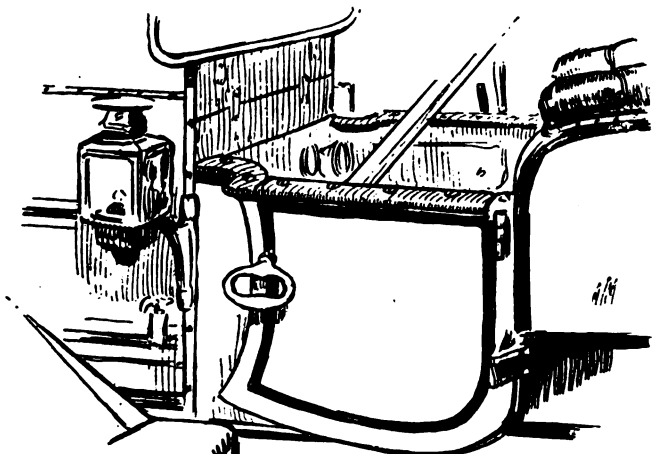
JACKSON



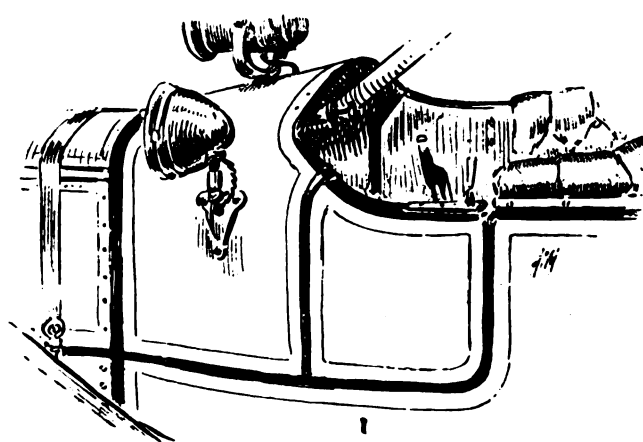
LOCOMOBILE



STODDARD-DAYTON



STEARNS



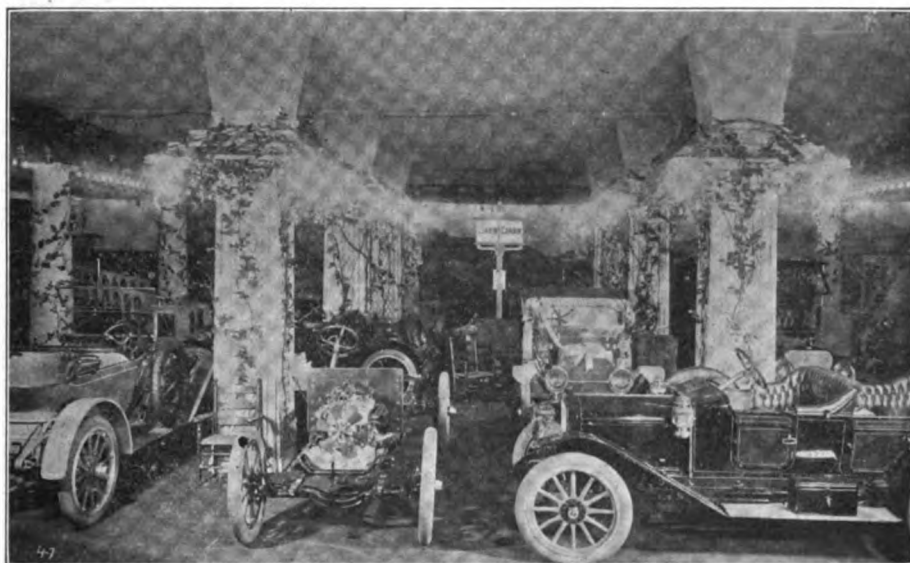
AMERICAN

enhanced by a polished chassis which attracts by its clean-cut appearance. The Case motor, only one size of which is made, is of the "T" head type with large valves and timing gears. These gears run in oil and a feature of the camshafts, with which they are connected, is their great accessibility; they may be removed complete without dismantling the motor. The drive from the motor is through a multiple disk

a governor in the pump piston allowing more oil at high speed and less at low speed. Light oil may be used in the transmission case, as it is non-leakable, being made oil retaining by a series of grooves which continually work the oil back from the otherwise possible points of escape. Another feature of the motor is its ignition system. A National magneto furnishes current, and an indicator shows which cylin-

trim-built, 30 horsepower torpedo roadster. It is mounted on a regular "30" chassis, with tires $32 \times 3\frac{1}{2}$ inches, and a wheelbase of 108 inches. A 25-gallon gasoline tank is carried behind the seats. As is the case with other Reos, left-hand control is employed. Although not having the name Reo, its "brother," the Owen, which was "adopted" last fall and renamed R-O, is included in the Reo exhibit. It is an imposing seven-passenger car, with a straight-line body, double running boards, and its size is exaggerated by the front doors with which it is equipped and the 42-inch wheels upon which it is mounted. The motor is of the Renault type, and is of the truly long-stroke type, $4\frac{1}{4} \times 6$ inches, the cylinders being cast in pairs. The valves are enclosed in individual aluminum housing. A Bosch dual system provides ignition, and circulation of the cooling water is effected by a centrifugal pump. Oil is maintained at a constant level in the crankcase by means of partitions.

The new Pope-Hartford Model Y, which is shown for the first time, is the first six cylinder car to be built by the old-established Pope Manufacturing Co., and is, indeed, brand new, though the model car of the type has been on the road for some time. Its power rating is 50 horsepower, the cylinders are cast in pairs, as in the



NEW CORBIN MODELS STAGED IN THE EXHIBITION HALL

clutch and three-speed selective transmission to the rear wheels by shaft. Typical of these cars are their clean dashes, which, except for the ignition switch and sight-feed oil gauge, are unencumbered. Larger timing gears, drop-forged camshafts with cams integral and die-cast, and white-bronze bearings are among the principal changes in the 1911 cars. An oil gauge, showing the amount of oil in the reservoir, has been added, and the magneto has been shifted to the left side. Otherwise the refinements are inconsequential.

Although, as so often is the case, mechanical refinements are not readily observable, the Reo contains its full quota of them. The multiple disk clutch has been retained, but more disks have been added to give additional surface and greater durability, and three light internal springs replace the heavy external spring serving to afford positive action without slipping or grabbing. There is no end thrust, as the springs do not press upon the motor or transmission. A double universal between clutch and transmission keeps the proper alignment, and with the clutch it can be removed easily without disturbing any other parts. Timken bearings are used in the rear axle system; the housing has been greatly strengthened and lengthened, and the torsion tube reinforced its whole length. In the Reo motor, in order to obtain the proper amount of oil at all speeds, the lubricating system has been reconstructed,



MARMON TROPHIES AND MARMON CARS SHOWN IN THE EXHIBITION HALL

der is firing. The contact breaker bar may be adjusted while the magneto is running. Soft rubber bushings, which are of double taper form, are arranged to compress around the insulation when the cover is put in place, sealing the wires against invasion of dust, water and oil. The ends of the wire are simply bent over and held firmly against the contact points. There is no wiring contact in the distributor, but current jumping an air gap to each contact. The Reo family also has been increased by the addition of a new model of a

four cylinder model, and in respect to transmission features and general construction it is closely similar to the latter. It is a somewhat larger and more striking car, however, due in part to the fact that in addition to its wheel base of 134 inches, it is equipped in touring trim, with $38 \times 4\frac{1}{2}$ inch tires in front and 39×5 in the rear.

The new four cylinder model likewise is rated at 50 horsepower, which is 10 horsepower more than was credited to last year's model. It is a somewhat larger car in other respects from its immediate prede-

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GENL. MGR. OF BRUSH RUNABOUT CO.



HENRY W. NUCKOLS
PRES. COLUMBIA MOTOR CAR CO.



FRANK BRISCOE
PRES. BRUSH RUNABOUT CO. & BRISCOE MFG. CO.



JOHN N. WILLYS
PRES. & GEN. MGR. WILLYS-OVERLAND CO.



W.C. SHEPHERD
PRES. MATHESON AUTOMOBILE CO.



HOWARD E. COFFIN
VICE-PRES. HUDSON MOTOR CAR CO.



HUGH CHALMERS
PRES. CHALMERS MOTOR CAR CO.



W.H. VANDEVOORT
PRES. MOLINE AUTOMOBILE CO.



LEE COUNSELMAN
GEN. MGR. CHALMERS MOTOR CAR CO.

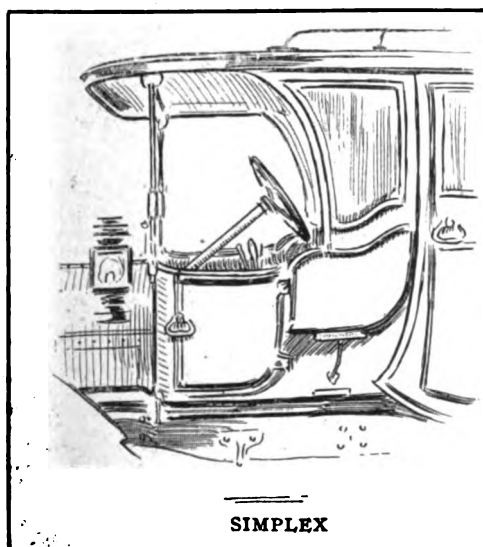
cessor, and has a number of detail changes which are calculated to render its action smooth and even. Among the points of individuality of the chassis may be mentioned its most striking feature which is the use of an armored wood frame, the metal is heat treated chrome nickel steel, the wood filler being of straight-grained white ash. The master clutch is of the leather-faced cone type, of large diameter and equipped with cork inserts. The new gearset, which is mounted in the rear upon a dropped cross-frame member, is of the four-speed type, selectively operated. Final drive is by double joined shaft, the torque reaction being absorbed by a very long bar, while

of the motor in tubular cases, which are so contrived that by loosening a coupling they may be dropped to afford access to the valve stems and springs. The chassis is solidly built from end to end, but one of its most original features is the contracting band clutch, which affords a bronze to steel contact.

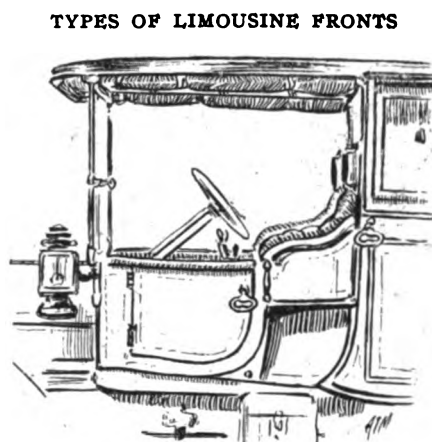
Some manufacturers adhere to the notion that it is practically impossible to prevent weaving in the frame under the severe stresses of rough usage and therefore seek, by various applications of three point suspension and universal joints, to isolate all of the moving parts from the effects of

wardly to meet the frame. The engine bed plate so formed thus ties the frame together and renders it absolutely rigid.

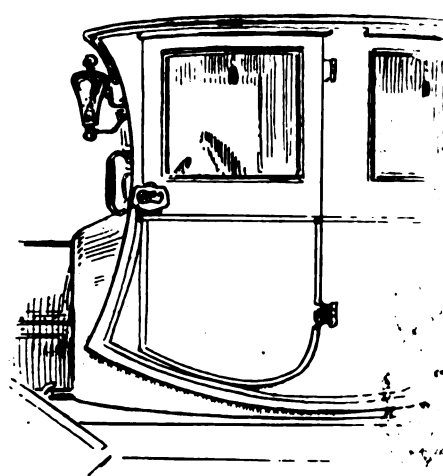
In other respects the construction of the Matheson is staunch and impressive. The rear axle, in which is embodied the selective gearset, is of original design, trussed on the under side and braced for alignment by means of tubular struts which are carried forward to the housing of the universal joint. The "silent six" motor, as its makers are pleased to term it, is of the valve-in-the-head type, with large ports and valves, and in addition to its silent action is claimed to have an unusually wide range of flexibility.



SIMPLEX



LOCOMOBILE



STODDARD-DAYTON

the traction load is taken up by radius rods. Points of minor individuality are apparent everywhere about the machine, as it is one of the few to be built almost entirely in the manufacturer's own shops.

Embodying a number of unusual features which are calculated to render its action sweet and uniform, the new Haynes chassis, both in the smaller sizes, rated at 36-40 horsepower, and the new and larger 50 horsepower model, are well worthy of close attention. The unit type of power plant is used, the two rear crank case arms being of very large dimensions and sufficiently rigid to support the weight of the gear box, which is distinguished by an unusually short length of shafts. The forward end of the power unit rests on two arms which bear against brackets on the frame side members, but are not positively anchored to them. Instead they are held down by the tension of short helical springs which surround the holding down bolts. The result is that in case the frame distorts during a rebound the motor is permitted to lift away from it sufficiently to escape being strained. This device is new at the present time, but a somewhat similar idea had been embodied in the mounting of the Haynes radiators previously. Another new feature is the housing of the valve stems

such frame movement. The Matheson Automobile Co., formerly distributor for the product of the Matheson Motor Car Co., but more recently established on a substantial basis as both manufacturer and distributor for the line, is one of the few concerns which adhere to the plan of rendering the frame as rigid as possible. While all necessary provisions for flexure of the driving parts is made, the frame is so reinforced at various points as to render it practically impervious to warping save under most unusual sorts of strain. Thus the rear corners of the frame besides being stiffened by the customary gusset plates are further strengthened by diagonal braces which almost meet in the center of the rear cross member.

Similarly the cross frame member in the waist, upon which is thrown the severe work of withstanding the periodic yanking stresses of the massive torsion tube, is braced by other diagonal members on the rear side, which meet at the housing of the ball and socket joint which supports the front end of the tube and encloses the universal joint in the propeller shaft. To stiffen the forward section of the frame which not only must uphold the dead weight of the engine but must withstand the torsional effect of the motor itself, the upper section of the crank case is flanged out-

One of the two exhibitors of two-cycle engined cars at the show, the Simplex Motor Car Co., manufacturer of the Amplex car, as distinguished from the Simplex Automobile Co., which builds the Simplex, has one of the largest and most impressively designed products in the show, despite its comparatively brief existence. The car is original in design from one end to the other, its particular claim on the attention of the showgoer this season being that it is now equipped with an automatic air starting device. It also possesses one or two other new features, though its general construction remains unchanged.

The air starting system is similar in principle to that which for several years has been in successful use by another manufacturer. That is to say, air which is compressed in a reservoir through a check valve on the rear cylinder is released to one of the cylinders which is about to fire when a special button on the dash is depressed. The selection of the cylinders is accomplished by means of a rotary distributing valve or timer, the apparatus being entirely original in design, as it is claimed. Another new development on the Amplex, and one that already has found favor abroad, is a special provision for increasing the rate of oil feed when the engine is being run at high speeds. Lubrication is carried out by

THE MOTOR WORLD

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CHRYSLER MOTORS CO.



JAMES H. CHRISTIE
CHRYSLER MOTORS CO.



JOHN D. SWEENEY
CHRYSLER MOTORS CO.



WALTER P. CHRYSLER
CHRYSLER MOTORS CO.



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CHRYSLER MOTORS CO.



WALTER P. CHRYSLER
CHRYSLER MOTORS CO.



WALTER P. CHRYSLER
CHRYSLER MOTORS CO.



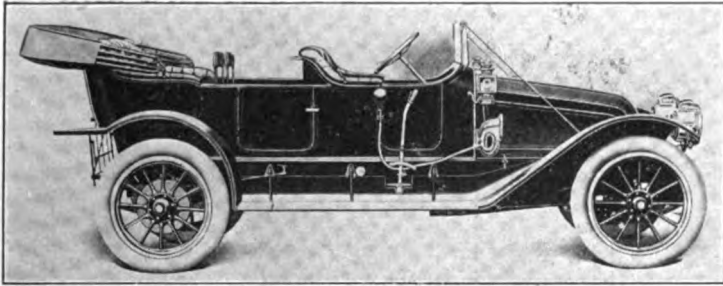
WALTER P. CHRYSLER
CHRYSLER MOTORS CO.



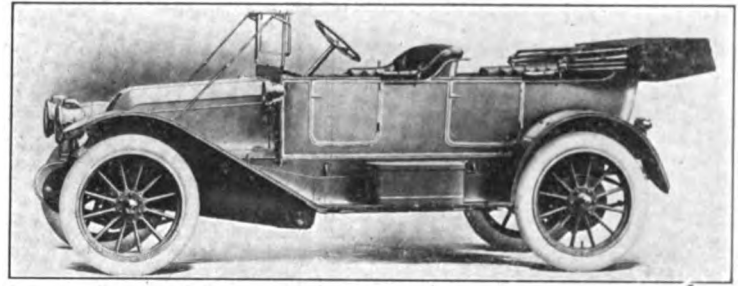
WALTER P. CHRYSLER
CHRYSLER MOTORS CO.



WALTER P. CHRYSLER
CHRYSLER MOTORS CO.



FRANKLIN 48 HORSEPOWER SEVEN PASSENGER TOURING CAR



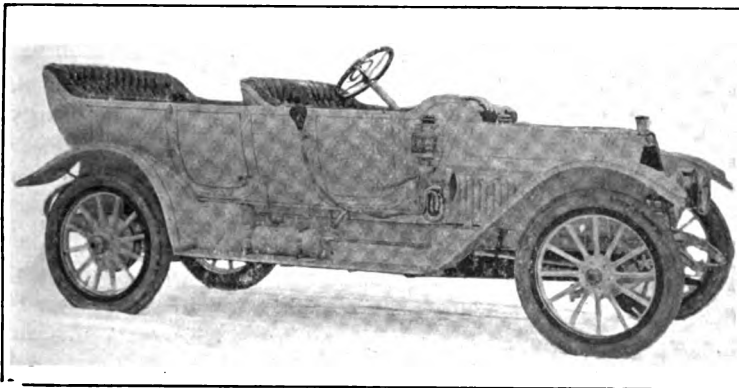
FRANKLIN 38 HORSEPOWER TORPEDO-PHAETON

means of a special form of Hancock roller, the casing of which is made an integral part of the crankcase. The various feeds, of course, are adjustable individually, but a special mechanical movement is added whereby all the feeds may be increased simultaneously without altering their relative proportions. The lubrication accelerator is put into operation by means of a small handle on the dash, which may be merely agitated to give a momentary increase of oil flow or adjusted for a permanent increase.

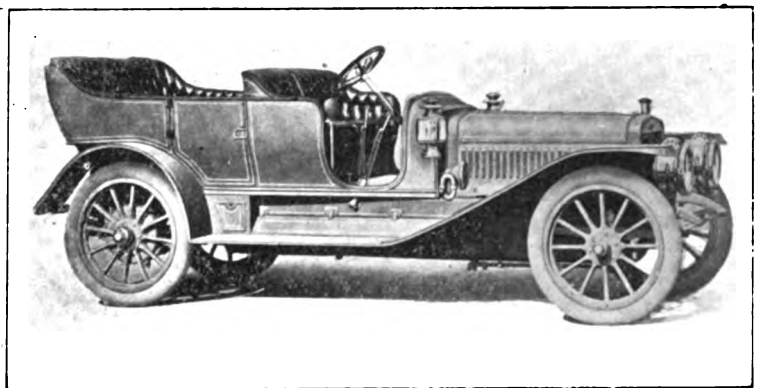
struction, however, which are the vital and exclusive portions of the machine, remain absolutely unaltered.

There are three cars of the two-cycle type exhibited at the show, but the Elmore differs radically from the others in that the piston has two diameters; that crankcase compression has been eliminated; that a rotary distributor is employed, and in other respects. The two-diameter piston model was adopted last year, but was used on only the larger model; however, it has

been forward by the downward stroke of the piston. This charge does not go to the combustion chamber above the piston which pumped it, but into the combustion chamber of another cylinder. Each revolution of the crankshaft prepares each of the four cylinders in turn to receive, compress and explode the charge, thus giving four power impulses with every revolution of the crankshaft. This system supplies a constant flow of gas and greater speed than was possible heretofore. The admission of gas may be changed while running to either



THOMAS SEVEN PASSENGER GUNBOAT



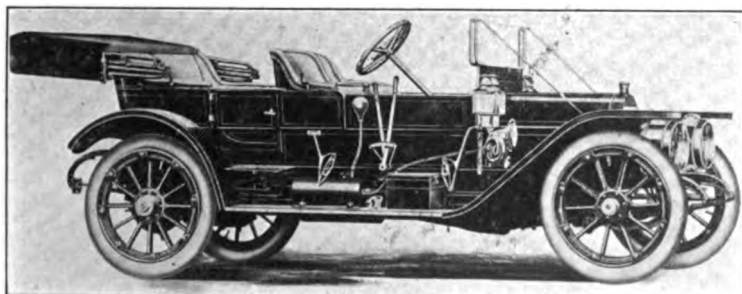
WINTON FOUR PASSENGER TOURING CAR

The bore of the cylinders has been increased 1-16 inch, the dimensions now being 5-1/16 x 5; the fan is now belt driven, instead of being actuated by bevel gearing; both spark plugs of the double ignition system now are carried in the caps which close the cylinder heads; a special detachable mounting has been provided for the Bosch magneto; the very long semi-elliptical rear springs have been increased in size, and the wheel base has been lengthened out to 128 inches. The details of the three-port engine, the original carburetter, axle mounted change gear and heavy gear axle con-

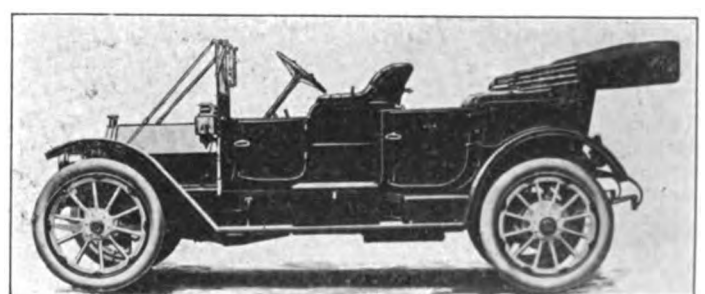
proved so successful that the three-port type of motor with the standard piston previously used has been discontinued entirely; it is one of the most interesting motors on the market, and is the development of the Elmore company's long and faithful adherence to the two-cycle principle. The elimination of crankcase compression is effected by the use of this differential or two-diameter piston, and by a rotary distributor which admits the proper charge from the carburetter. The lower half of the piston acts as a pump, drawing the charge into the lower or annular cham-

ber forward by the downward stroke of the piston. This charge does not go to the combustion chamber above the piston which pumped it, but into the combustion chamber of another cylinder. Each revolution of the crankshaft prepares each of the four cylinders in turn to receive, compress and explode the charge, thus giving four power impulses with every revolution of the crankshaft. This system supplies a constant flow of gas and greater speed than was possible heretofore. The admission of gas may be changed while running to either

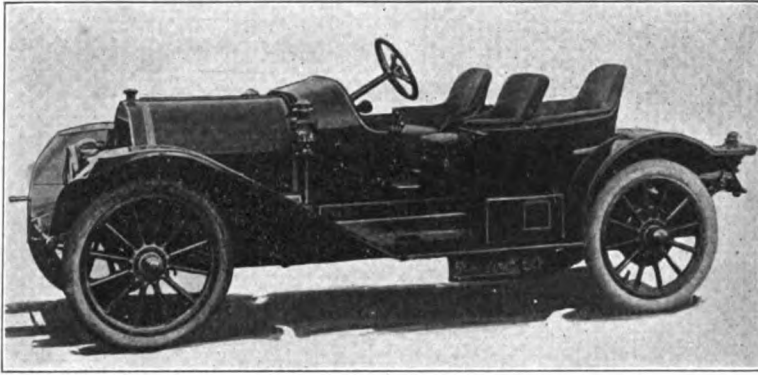
early or late, which is a factor in economy of fuel consumption and gives somewhat the effect of throttling. Both the 30 horsepower and 40 horsepower motors are cast separately, the former cylinder dimensions being 4 x 3 1/2 inches, and the latter 4 1/2 x 4 inches. A multiple disk clutch replaces the expanding band type, and the selective transmission allows three speeds forward and one reverse. Of the two chassis, the smaller has 32 x 3 1/2-inch tires and 108-inch wheelbase, and the larger 34 x 4-inch tires and a 114-inch wheelbase.



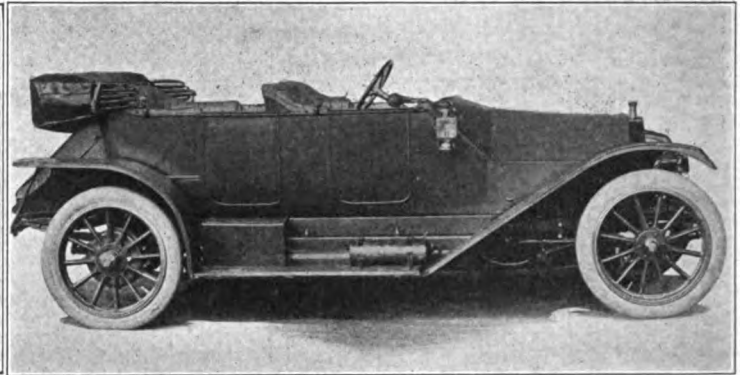
STEARNS "30-60" CLOSED FRONT TOURING CAR



STEARNS "15-30" FRONT DOOR TOURING CAR



SPEEDWELL WITH DUCK BOAT BODY



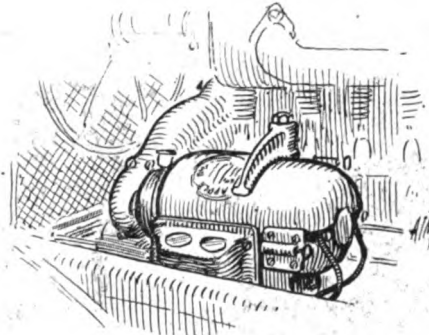
SPEEDWELL 50 HORSEPOWER CRUISER

In the Chalmers 30 chassis a slight alteration has been made, which presumably improves the efficiency of the driving action to some extent, and which consists in the replacement of the torque tube, formerly used, by a torque bar. This permits the driving shaft to be equipped with two universal joints instead of only one. The arrangement of the service brake also has been changed slightly, although it remains in the same location—immediately behind the gearset and on the driving shaft—and although it still is actuated by the single pedal, which also controls the multiple disk clutch. It almost goes without saying that the general construction of the unit power plant is practically unaltered, the ingenious method of fashioning the intake pipe into a single casting with one of the water jacket covers for the block casting of the cylinder unit being retained. Another feature that is retained is the two-bearing crankshaft. One innovation, however, is the plunger type of lubricating pump with which this model now is equipped.

The 40 horsepower model, which is one of the more substantial cars on view at the show, has undergone but few alterations. Some of the changes which it has undergone in common with the smaller sister chassis, however, are an increase in frame sizes and the use of the Bosch dual ignition system. The 40 motor now is equipped with a new type of carburetter, while the valve mechanism has been fully enclosed.

The seeker for the unusual will find what he is looking for at the Speedwell exhibit, and, although there is nothing startling in

a mechanical sense, there are two strikingly new bodies that are far out of the common, one styled the "Duck Boat"—and the reason for the designation is evident—is a three-passenger car with but one door, it has only one seat in the rear, entrance to which is through this door, and by way of an "aisle" between the two seats in front. The steering wheel is on the right, but, as



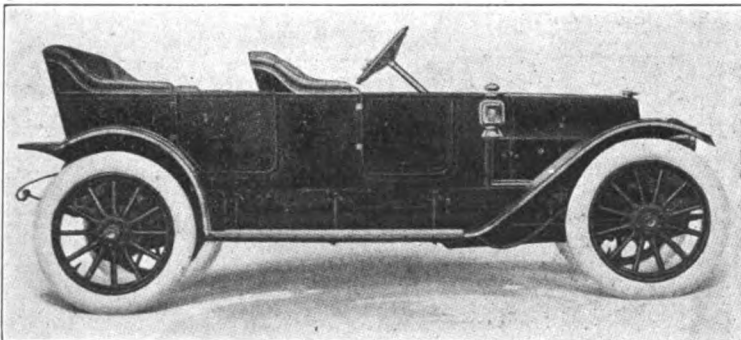
DYNAMO MOUNTING ON SPEEDWELL

in all Speedwell closed-front models, the control is at the left. A canary yellow finish and pigskin upholstery gives the "Boat" a head-turning appearance. The other new body is the "Cruiser," a four-passenger car of the torpedo type, with scuttle dash, high doors with concealed latches and 132-inch wheelbase. It is finished in a gun metal color, with upholstery of pigskin. All Speedwells are carried on a 50 horsepower chassis with straight-line drive, the springs have been flattened, thus lowering the body two inches. On the closed-front models the controlling levers are centrally mounted. In respect to mechanical changes there

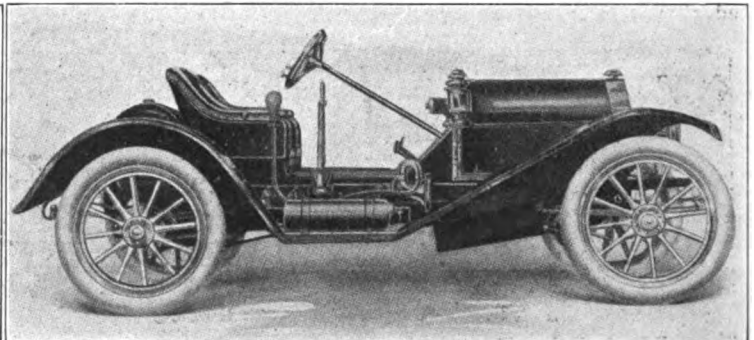
are none, but a gear pocket has been arranged in the engine to permit of the employment of a dynamo for electric lighting when it is desired.

Back of the Vanderbilt cup the Alco display is noteworthy by reason of the stability that is evidenced in its construction as well as by the thoroughness of its design. Both six- and four-cylinder models are built, the new chassis having undergone some slight changes since they last appeared in the Garden. One of the most important of these is the adoption of a new type of carburetter, the Newcomb carburetter, so-called, which is built especially for Alco use, and which is said to yield remarkable flexibility in service, the exact nature of its construction, however, is not disclosed. The Bosch dual ignition system has been retained, but with a larger battery and a new style coil. The motor now is set perfectly level in the frame, instead of being slightly inclined to the rear, the radiator is trunnion supported and tied to the dash at the top, the decompressor lever has been removed from the dash, the compression relieving device now being operable from the front of the car. In connection with the exclusive and unusually heavy rear axle design, which was introduced last year, a new type of strut rod has been introduced.

In addition to these alterations the new four-cylinder model has been increased in power and reduced in price. The cylinder dimensions are now equivalent to $5\frac{1}{8}$ by $5\frac{1}{2}$ inches, bore and stroke, the bore having been increased by about $\frac{3}{8}$ of an inch. The



OVERLAND CLOSED-FRONT TOURING CAR



OVERLAND \$775 ROADSTER

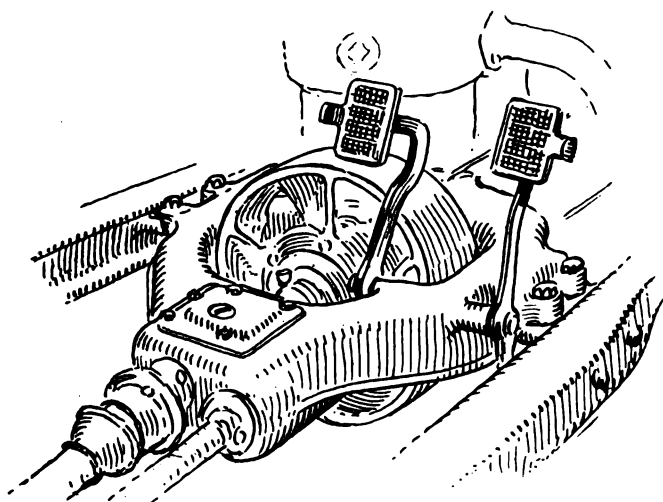
valves likewise have been increased in size, while the capacity of the cooling system has been increased. The price now is \$4,500, as against \$4,750 last year.

Hudson cars, while still relatively new in the market, already have acquired standing, and the display at this time is rendered even more noteworthy than otherwise would be the case by the fact that the new "33" is making its initial bow to the show-going public. The new model, which has been widely exploited, is not merely an enlargement of the Hudson "20" of last year.

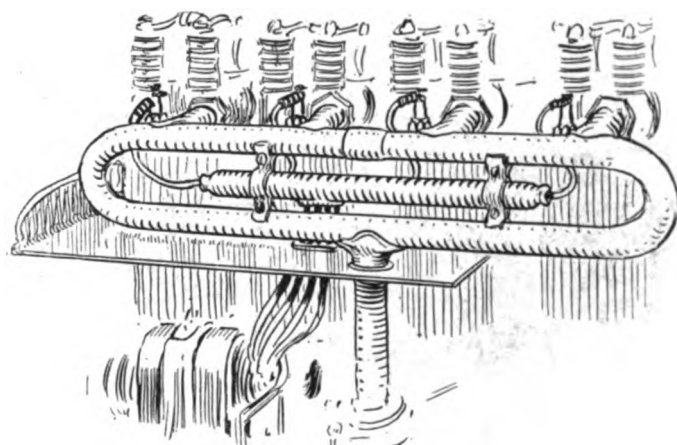
stout arms which extend forward and are bolted rigidly to the rear arms which support the crankcase. The flywheel thus is completely framed in, and all clutch thrusts are thereby confined to the power plant itself, while the multiple disk clutch itself is perfectly accessible. The change gear arrangement, which is selectively actuated, is noteworthy for its small size and compact arrangement, the amount of space used for the three-speed arrangement being hardly larger than that used on some gear-sets which afford but two forward speeds. The heavy drop frame design, torsion tube

to the crankshaft bearings and through the hollow journals to ducts running the full length of the shaft. The result is that the bearings constantly are flooded with oil, all surplus being drained into the case, strained and returned to a 1½-gallon reservoir in a special compartment in the bottom of the base.

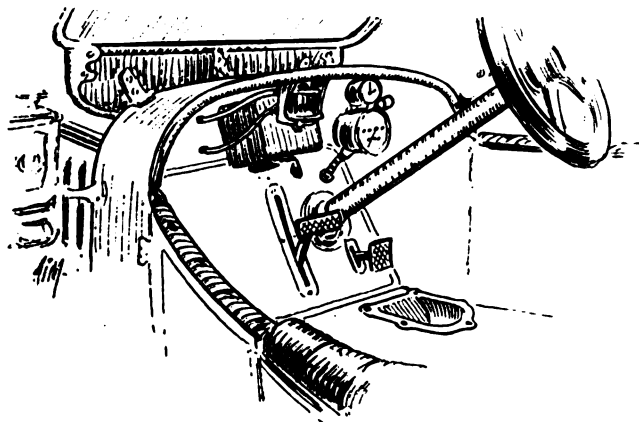
The very latest chassis of the Marmon line are distinguished by one or two points of refinement, but very few actual structural changes. One of the points of novelty is the "concealed" horn arrangement, the signal horn being mounted under the bon-



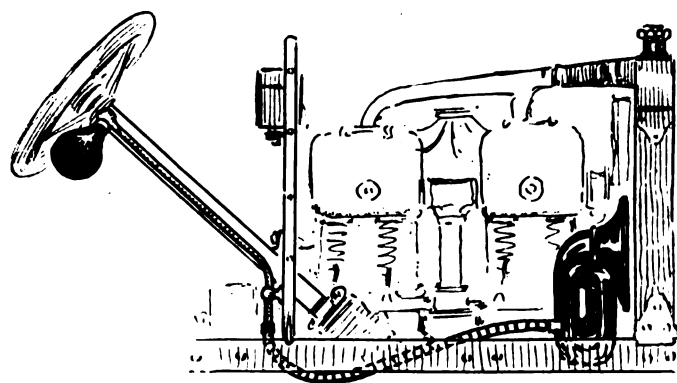
HUDSON INTEGRAL GEAR BOX, CLUTCH AND PEDALS



FRANKLIN CONTINUOUS SUCTION INTAKE PIPE



MAXWELL SKUTTLE DASH AND HEEL REST



MARMON WAY OF MOUNTING HORN INSIDE THE HOOD

but is an entirely new product, in which are embodied many original ideas and not a few adaptations of practice which has been approved on machines of much larger power and price.

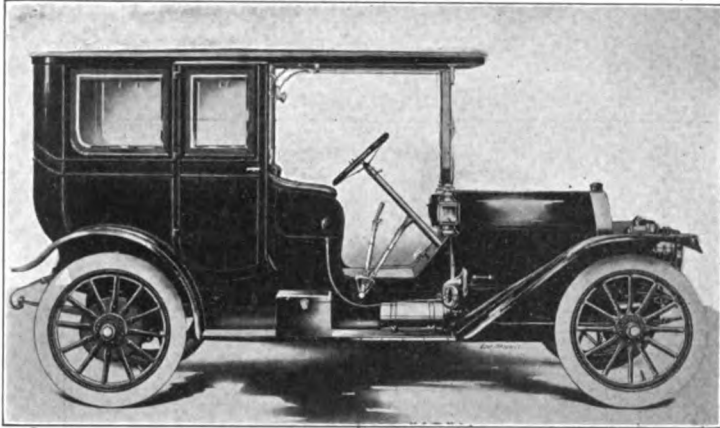
The motor employed is of the improved block type, which is to say, that all its moving parts are encased, though rendered accessible by the use of removable cover plates. The centrifugal water pump and magneto, which are mounted at the front of the engine, are driven by a transverse shaft lying above the two-to-one gear housing. The method of mounting the unit power plant in the frame is particularly neat, the gearbox being hung from two

construction, three-quarter elliptic springs and ball and roller bearing mounted axles are in line with specifications which are very familiar to the student of motor car design.

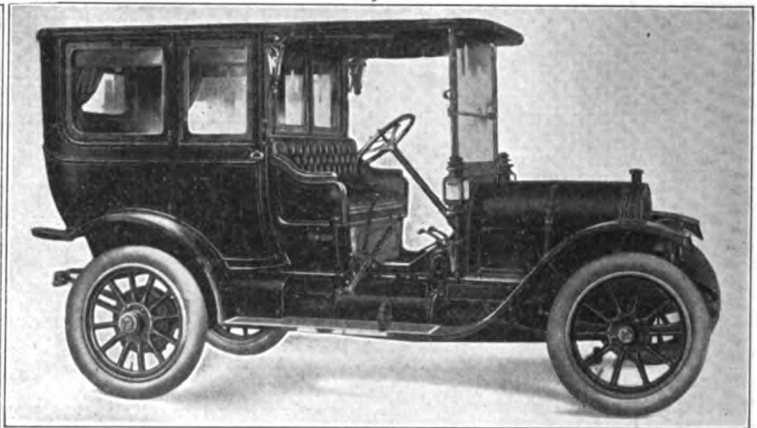
In view of the extent to which crankcase oiling systems have been developed by various makers during the past two or three years, it is noteworthy that the Marmon engines are equipped with practically the same system that was introduced by the Nurdyke & Marmon Co. as far back as 1901. The system involves the use of a very powerful gear pump, which is gear driven, and which delivers oil in large quantities

net just behind the radiator and on the right-hand side. The horn tube is of plain tubing, rigidly affixed to the steering post, with the bulb attached at right angles to it just under the engine space, where it is connected to the horn by a length of the usual flexible tubing. Another novelty which is applied in the neat little runabout model is a special segmental depression in the flat deck between the fuel tank and the trunk, which is designed to serve as a footing for a spare tire. The wheelbase of the standard chassis has been lengthened from 116 to 120 inches, and, of course, the closed-front models are new.

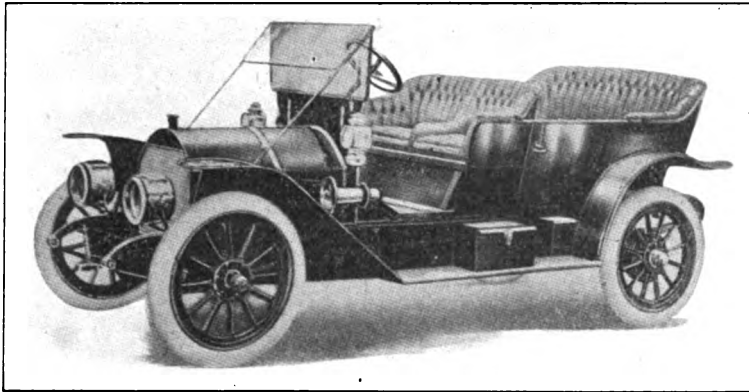
The Marmon rear axle and transmission



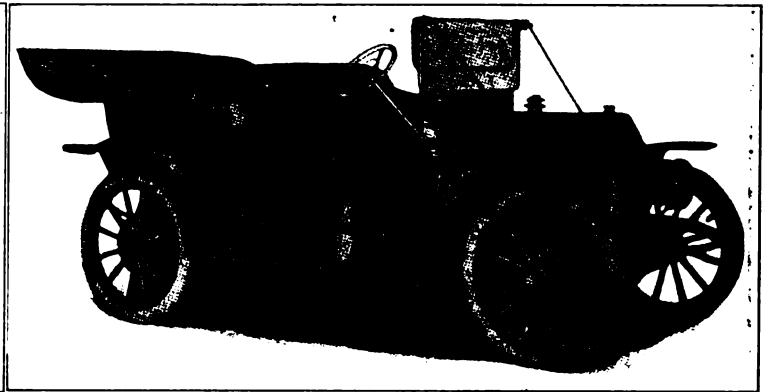
NATIONAL SEVEN PASSENGER LIMOUSINE



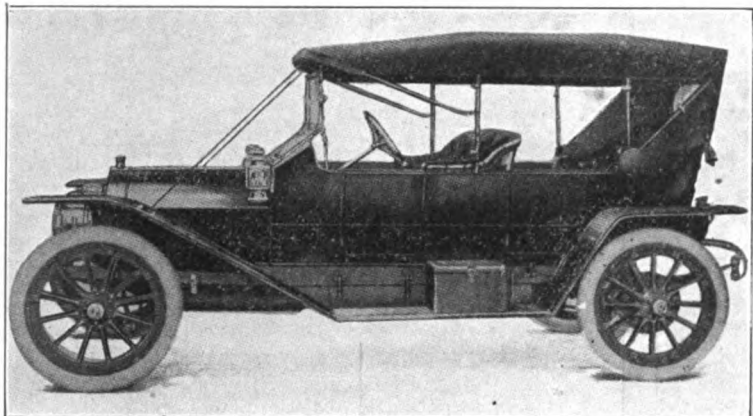
POPE-HARTFORD LIMOUSINE



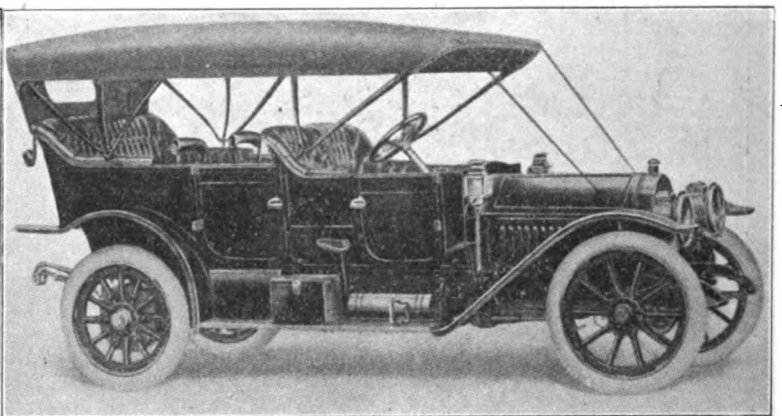
MERCER 30 HORSEPOWER TOURING CAR



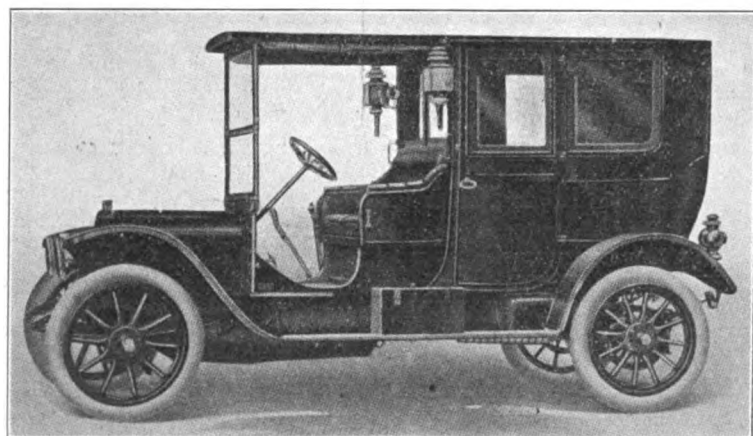
MOLINE FIVE PASSENGER TOURING CAR



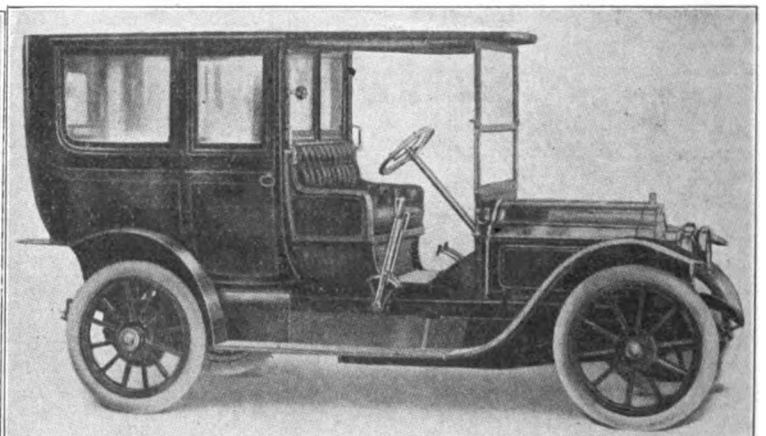
SELDEN FRONT DOOR TOURING CAR



SIMPLEX SEVEN PASSENGER TOURING CAR



THE WHITE LIMOUSINE



THE GARFORD LIMOUSINE

system is distinguished by the thoroughness with which the moving parts are housed and by the compactness of the general construction. The gearset is carried on the rear axle, a peculiar and original feature of the system being the manner in which the wheels are mounted, and which is rendered conspicuous by reason of the fact that the wheels themselves have no protruding hubs. This is due to the fact that the wheels are mounted on large annular ball bearings directly on a line central with the spokes. The floating drivers have large flanges at the outer ends, the inner ends being square where they enter the gears of the differential, and also have a ground fit adjoining the square end to give the shafts a snug fit in the journals of the differential. When

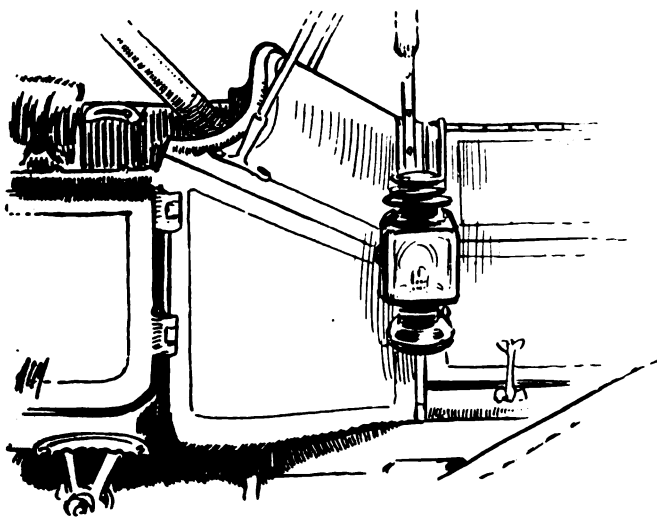
made to protect the clothing of the operator from becoming entangled in the lever and segment of the change gear mechanism. A rectangular housing rises from the floor for three or four inches, its length and breadth being just sufficient to allow full movement for the lever in both slots. The segment itself is completely concealed, however, while the interior of the car also is protected from draughts which otherwise might come through the opening in the floor.

The exhibit is graced by a very fine example of three-quarter landaulet construction, which is brought close to the ground by the combined effects of a double drop frame and very deep three-quarter elliptical springs, the lower members of which are

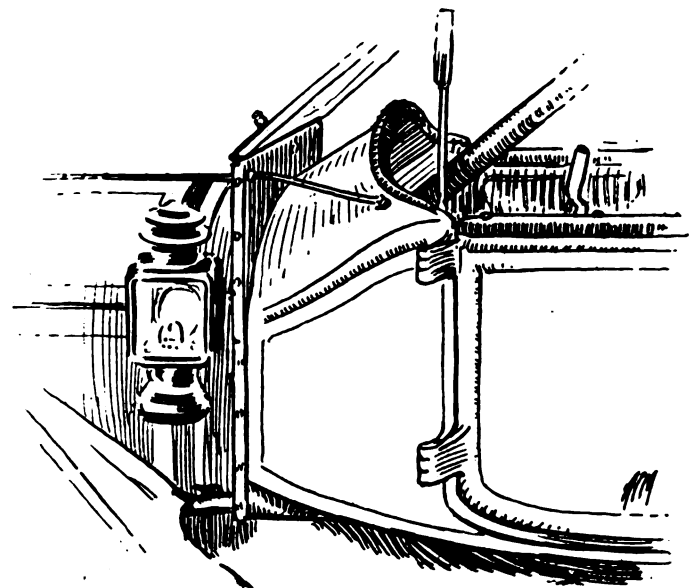
the new lubricating system, the oil being forced by a gear-driven pump in the engine case through channels in the cylinders to all bearings. The front axles are now drop forged on all models. The driving control is on the right-hand side, except in the coupe, in which it is on the left side with control levers centrally located. The bright yellow Traveler, striped in blue, is a very classy looking car, with decidedly straight lines and low-hung effect. As on all Americans, the wheels are extra large, the tires on this car being 40x4 inches. The scuttle over the dash has a very slight rise, and upon it are mounted the side lamps and a searchlight.

At the Packard stand may be seen the

CONTRASTS IN SKUTTLE DASHES



INTER-STATE TORPEDO



HAYNES ROADSTER

the shaft is inserted and the flange bolted to the wheel, it virtually becomes a part of the wheel. Hence all side thrust on the wheels is transmitted to the differential bearings in the form of radial load. The effect is to reduce friction and prolong the life of the bearings.

Except for a slight alteration in the method of supporting the motor, whereby it now is hung from four points instead of only three, and the provision of a special drip pan under the carburetter, the construction of the Thomas light six cars remains practically the same as heretofore. The model is well standardized, and is presented in a number of attractive variations of the front-door pattern of touring and torpedo car. It is important to note the connection with the adoption of the prevailing styles of body, that the change gear and brake levers are placed inside the door and at the right of the driver. It also is noteworthy that special provision has been

hung below the rear axle. The body is of the closed-front type, the enclosure extending only to the seat line, however, as in the case of the conventional touring car of the day.

Although most famous because of its underslung frame, the American is full of other good features and is one that few thinking men will permit to escape their consideration. This frame itself is supported by semi-elliptic springs which are practically straight when loaded, and permit the greatest amount of vertical movement with the least amount of friction between the plates. As the spring is deflected from its normal position, its tendency is to become stiffer. The lower center of gravity obtained makes a straight-line drive possible, which saves power usually lost by angle joints. The 50 horsepower chassis mounts a four-cylinder, "L" head motor, with cylinders $5\frac{3}{8} \times 5\frac{1}{2}$ inches. There are but two exposed flexible steel oil pipes in

"Thirty," with brougham, coupe and close-coupled bodies, and the "Eighteen," with a four or five-passenger open touring body. Probably the most striking is the new inside operated, five-passenger brougham. It is on a phaeton chassis, and is interchangeable with the open body. There is a door on each side, the right one entering to the rear seat, and the one on the left entering to the front seat. The car is painted black with deep gray, and has nickel trimmings. The coupe, which also is inside driven, seats either two or three persons, and the body is interchangeable with that of the open runabout of either a "30" or an "18" chassis. It is finished with a red body and running gear, with black hood and scuttle dash, and the monogram panels are a bright yellow. The mechanical improvements are extensive, but all in the nature of detail refinement, developing previous models.

One of the few unusual features pos-

sessed by the National 40 model is the provision of an air intake in the inlet manifold just at the point where it branches in leading to the two cylinder groups. By means of a small lever mounted on the steering column it is possible to adjust the mixture to compensate for undue richness, particularly when running at high speeds. The valve also provides means for scavenging the motor when coasting with the

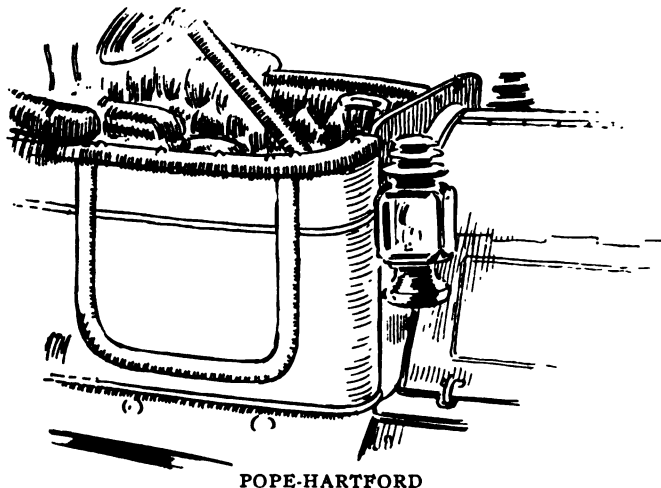
has the T-head form of motor, with cylinders cast in pairs, selective change gear and shaft drive.

Maxwell construction in general remains the same as last year. The line throughout is standardized in respect to the form of the various parts, but by virtue of a good range of chassis and an extensive line of bodies, the range of models has become

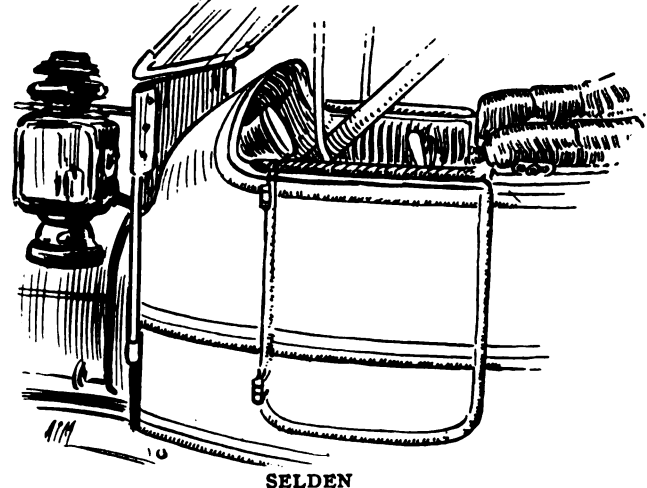
which still lists at \$600, now is fully equipped.

The GA model, which is rated a new car, is substantially a variation in torpedo form of the EA five-passenger touring car. Model I, which is of 25 horsepower, has the same style of unit power plant with three-point suspension, shaft drive and magneto and running equipment that prevails in the remainder of the line. This

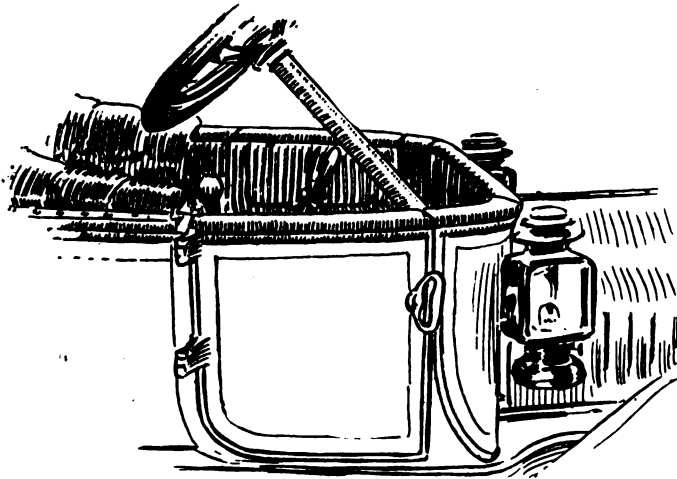
CONTRASTING DESIGNS IN DOORS, DASHES AND LAMP MOUNTINGS



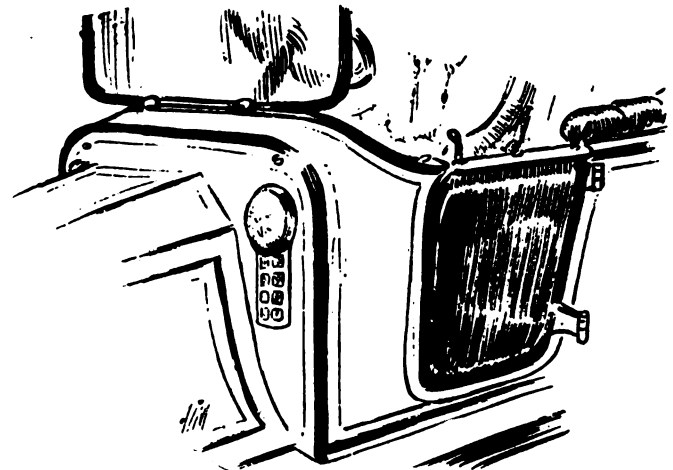
POPE-HARTFORD



SELDEN



WHITE



FRANKLIN

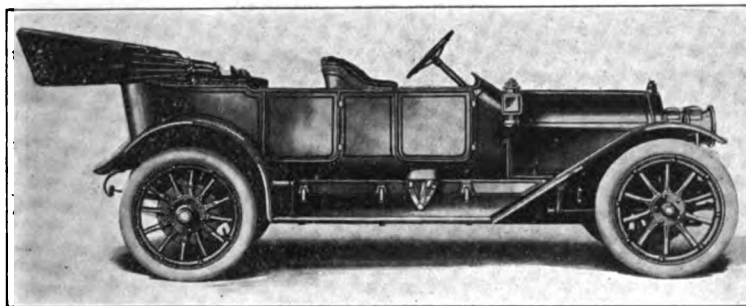
ignition cut off and the throttle closed. In the latest models the valve in question, which, it may be remembered, was used on last year's cars, is improved to the extent that it is rendered non-sticking. It is now of the poppet type and normally held to its seat by means of a spring, which insures its tight closure."

In addition to this slight alteration, the mounting of the carburetter has been changed so as to render the adjustments more readily accessible. Similarly the oil filler tube leading to the crank case has been rendered more accessible, while a floating oil level indicator has been added to assist in regulating the system. Except for these points the car remains about the same as last year, which is to say that it

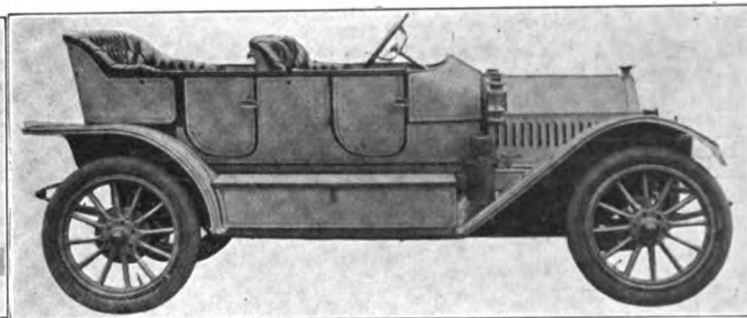
go, the adoption of a vane feed multiple delivery lubricating pump and the installation of a new type of carburetter are the principal innovations. A point of more general interest, perhaps, is the fact that Maxwell prices have been reduced materially all along the line, the announcement of the cut coming just before the opening of the show. The EA, GA and GA roadster models, which were formerly listed at \$1,600, now sell for \$1,350; the new model I, which was to have sold at \$1,100, now is listed at \$950; while the Q line, consisting of runabout and touring car models, which formerly sold for \$900 and \$1,000 respectively, now stands at \$750 and \$800 respectively. The little model AB, very great. As far as mechanical features

includes, almost as a matter of course, multiple disk clutch and thermo-syphon cooling, which are boasted features.

Front doors have been added to nearly all the cars, but few of them are detachable, a feature likely to be desired during the hot weather when the greatest possible circulation of air is sought for. The Oakland is distinguished as being one of few which are so equipped. Mechanically, there are no radical departures in the 1911 Oaklands, but in the 40 horsepower models are several improvements of a refining character. The front axle is still an I-beam section, but of a drop pattern; the radiator is larger and of the vertical tube type; the running boards are alumi-



INTER-STATE "50" TORPEDO TOURING CAR



JACKSON FOUR PASSENGER TORPEDO

num, and strut rods have been placed extending from the spring perches to the rear of the transmission housing, strengthening the torsion tube and rear construction. The cylinder heads of the motor are of different design and easily detachable, and minor changes such as a heavier starting crank, polished crankcase and enameled cylinders add to its appearance. The larger cars, with $4\frac{1}{2} \times 5$ -inch motors, have 34×4 -inch tires and a 112-inch wheelbase; the smaller ones with 4×4 -inch motor, have $32 \times 3\frac{1}{2}$ -inch tires and a wheelbase of 100 inches.

The Garford car, which long has been favorably known as built for other distributors than the Garford Motor Car Co., now appears as an entirely individual product and is sold only under the Garford name-plate. It is a car of sturdy qualifications, one of the better class of products, and one which possesses several points of distinctive originality. It is equipped with a four-cylinder T-head motor of $4\frac{3}{4} \times 5\frac{1}{4}$ inch cylinder dimensions, which is rated at 40 horsepower. The change gear is of the selective type, differing this year from last in that the arrangement of the gears has been changed slightly. The result is that the low speed forward position of the gear shifting lever now is at the back of the segment, instead of in front. Another new feature is that the air adjustment for the carburettor now may be regulated by means of a small lever on the dash. In point of body design and finish, the complete cars are every whit as attractive as the bare chassis.

A belated arrival at the show was a bright yellow, brown striped torpedo, styled

the McIntyre Special. It is a smooth sided creation with a rounded back of quite original lines, and its passenger capacity is four. The motor has four cylinders, $4\frac{1}{8} \times 5\frac{1}{4}$ inches, cast in pairs, and it is capable of developing 40 horsepower. Ignition is by the Bosch dual system. A unique feature of horn mounting is disclosed by raising the hood under which it is secured to the front side of the dash, just to one side and behind the motor. The brakes are external and internal, and the springs are semi-elliptic and three-quarter platform. Tires, $36 \times 3\frac{1}{2}$ inches are used all around.

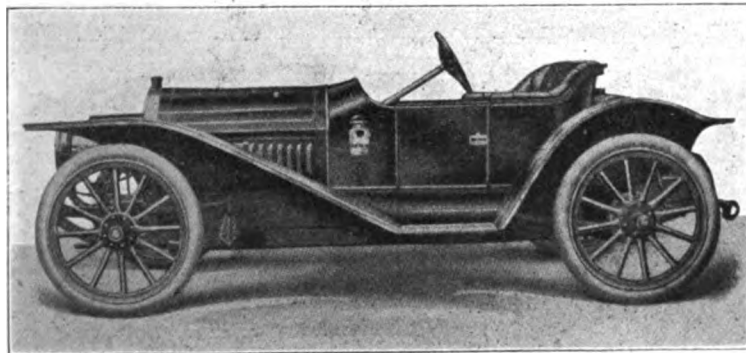
New bodies on the Moon which increase the seating room and a lengthened wheelbase serve to make those Moons appear much larger and more imposing than the previous models. The cars shown are one 45 horsepower, five-passenger torpedo, and two bodies, a coupe and a four-passenger torpedo, upon 30 horsepower chassis. The larger model has 36-inch wheels, 121-inch wheelbase, a multiple disk clutch and a four-speed selective type transmission. In the 30 horsepower chassis the transmission allows three speeds, the wheels are 34 inches, and the wheelbase 114 inches. Only a few mechanical changes have been made, including the addition to the "30" chassis of a multiple disk clutch and brake equalizers, all similar to those in the "45" chassis.

Two-cylinder, two-cycle motors are shown exclusively by the Atlas cars. Not only have new bodies been added to the line, but substantial changes have been made in the motor and power plant, in that the former is now cast in pairs, and not singly, and that the latter is a unit construction with a three-point suspension.

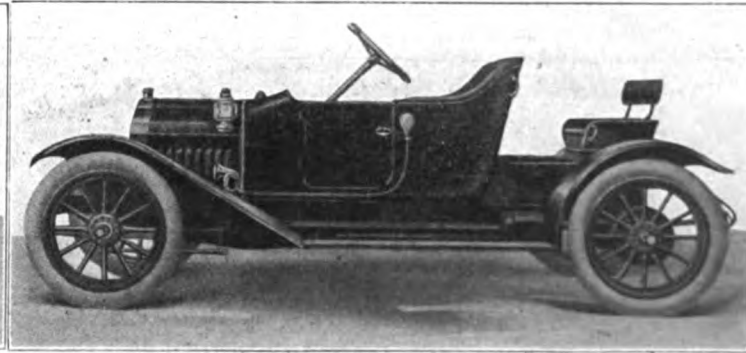
The motor also has been improved by the substitution of roller bearings for the long plain bearings; lubrication is now accomplished entirely by oil mixed with the gasoline, a method which has proven very successful in two-cycle motors heretofore. Two new bodies are shown—a town car and a torpedo runabout, both upon the 20 horsepower chassis, having left-hand steer with right-hand control. There also is a seven-passenger, four-cylinder car of 40 horsepower, but with the more familiar right-hand control.

Simplicity is the keynote of the Everitt "30," and what it means is indicated by the claim that the Everitt motor contains 150 less parts than any other. The strength of this claim is made apparent by the composite motor, which is original and unlike any other in that the one-piece casting includes the four cylinders, manifolds and various other parts. This construction has been carried still further this year in that the supports for the pump and magneto also are cast integral with it. It is the only change of moment that has been made in the Everitt line, which is distinguished by the Bosch dual system of ignition, a cone clutch, three-speed selective transmission a unit with the rear axle, semi and full-elliptic springs and 110-inch wheelbase.

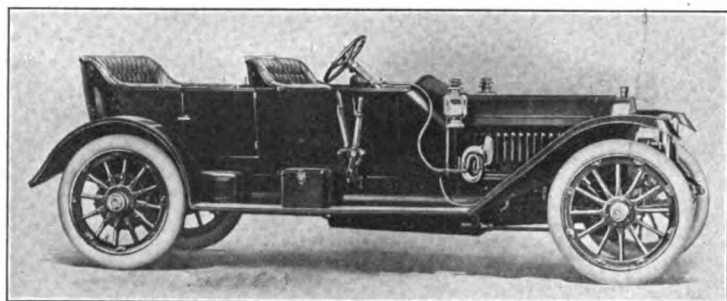
While at one time the make-and-break system of ignition was favored by many engineers, it is now shown on but one make of car exhibited at the Garden—the Rainier. This, however, is a simplified system, employing rotating cams. The current is carried through a short piece of wire to a bus-bar passing horizontally along the top of the cylinders, and knife switches



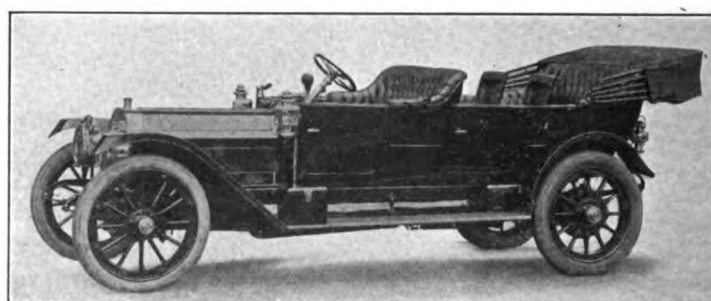
REGAL "20" UNDERSLUNG RUNABOUT



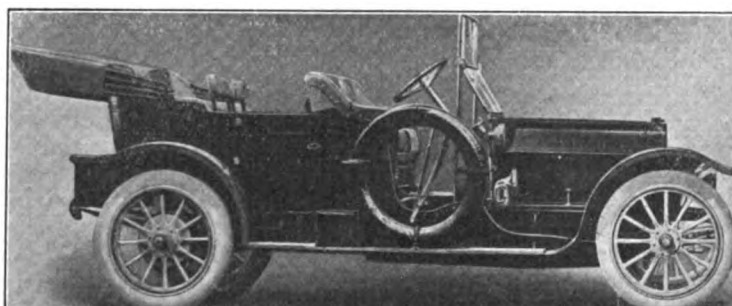
NEW ATLAS TORPEDO RUNABOUT



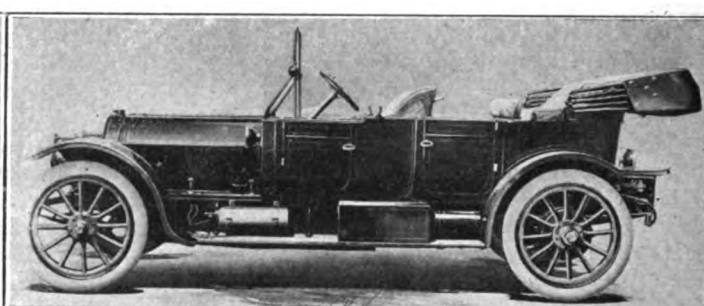
LOCOMOBILE "SIX" TORPEDO



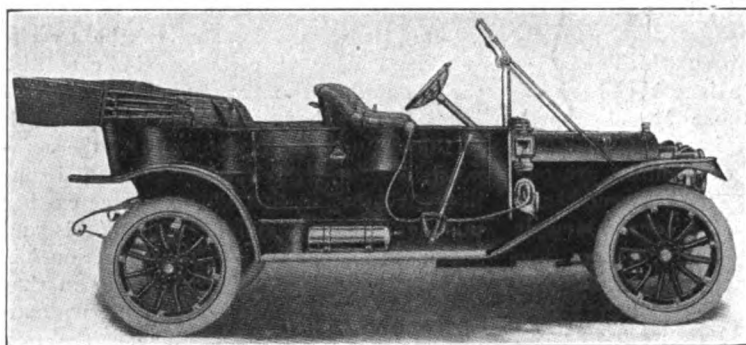
LOCOMOBILE CLOSED FRONT TOURING CAR



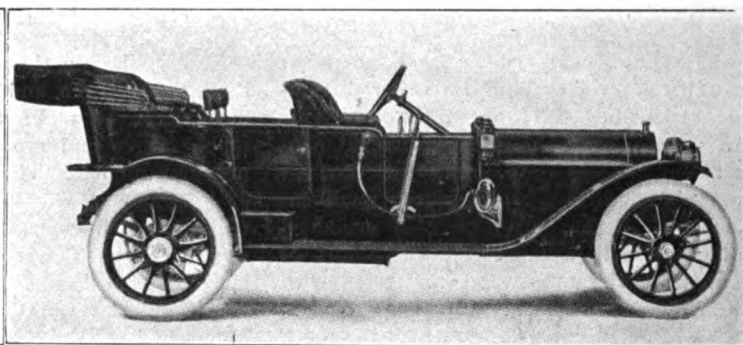
KISSEL SIX CYLINDER TOURING CAR



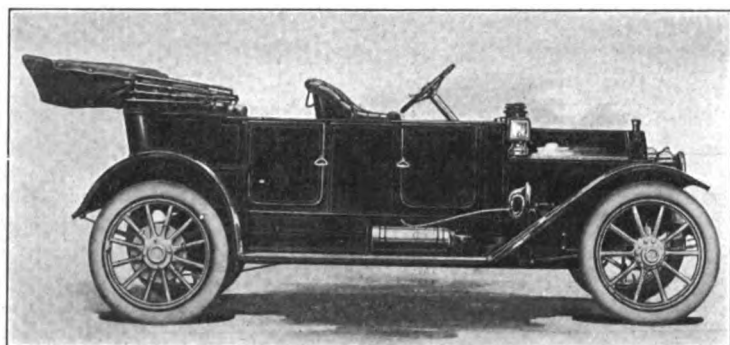
KISSEL SEVEN PASSENGER TOURING CAR



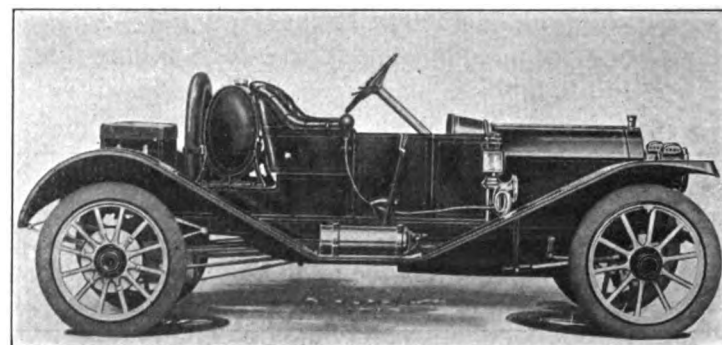
CORBIN CLOSED FRONT TOURING CAR



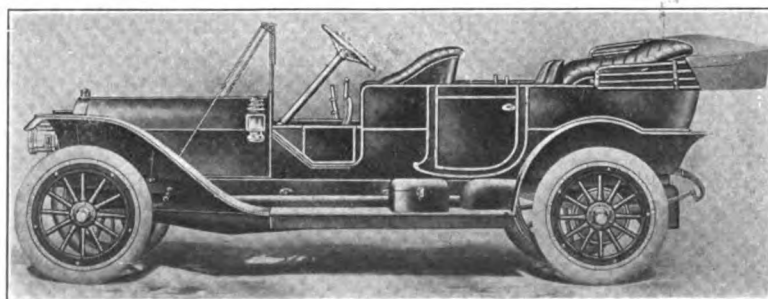
MITCHELL FRONT DOOR TOURING CAR



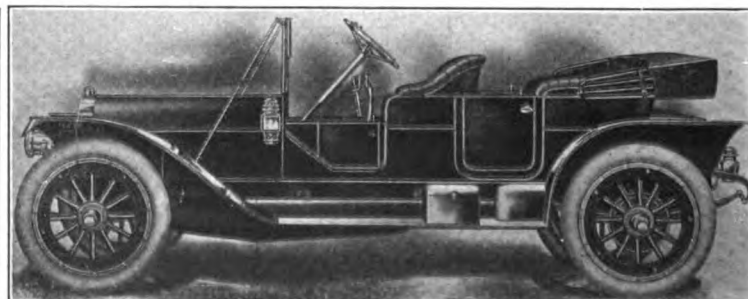
MARMON FRONT DOOR TOURING CAR



MARMON TORPEDO ROADSTER



KNOX "6-60" STANDARD TOURING CAR



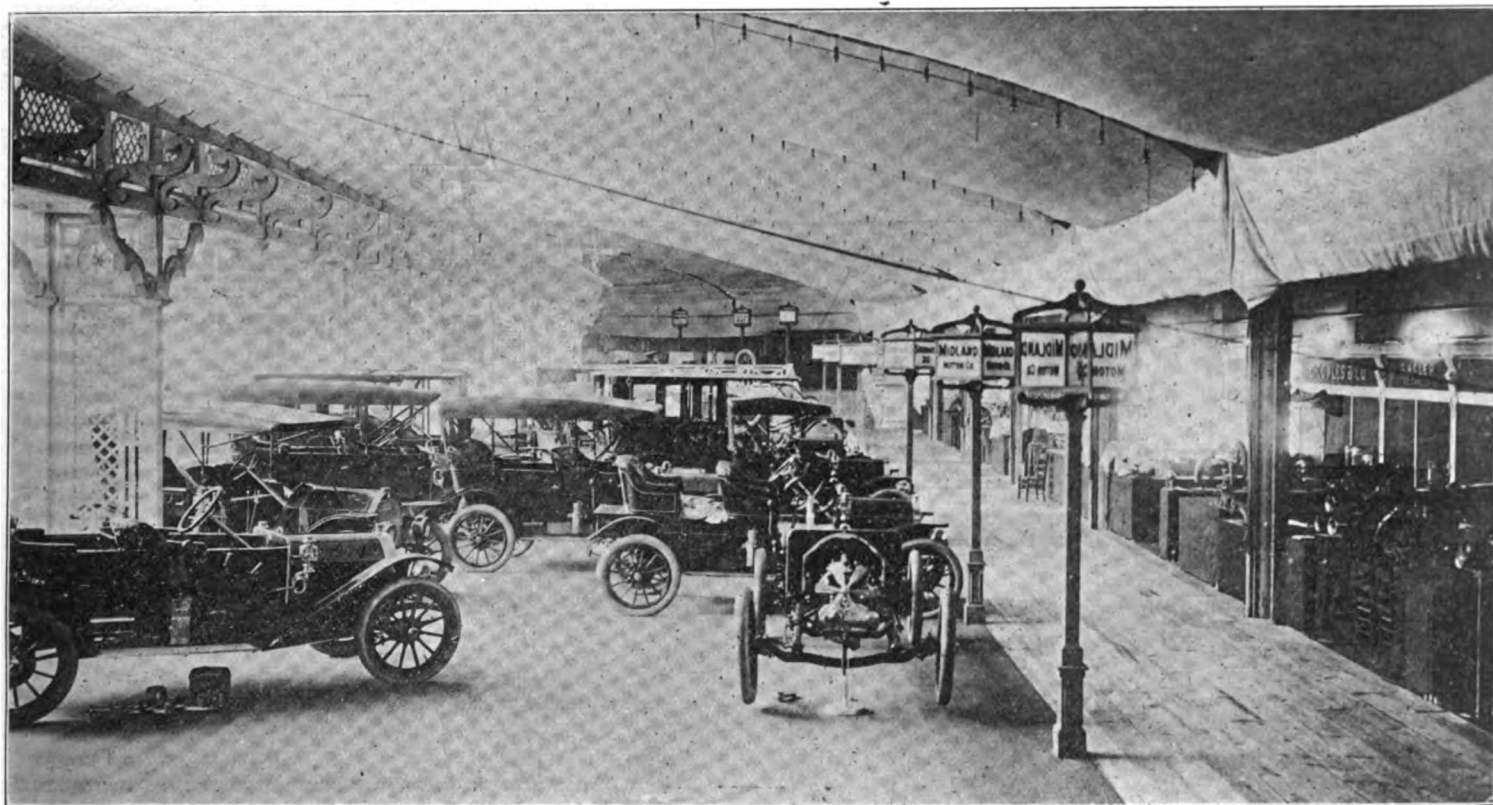
KNOX CLOSE COUPLED TOURING CAR

connect it to four electrodes. A rotating shaft with four cams brings the hammer to the contact point, and when the cams have passed a given point the hammer springs back automatically. The mechanism is enclosed in an aluminum case and is easily accessible. This year the clutch is built in a separate housing from the transmission, although when assembled with the transmission it is integrally joined and becomes a unit with it. This eliminates a universal joint, makes the unit more com-

being provided to gain access to them. The Bosch "two independent systems" of ignition is employed this year for the first time, and in other respects the machine has been more or less refined. One of its individual characteristics is the method of linking up the rear axle to the chassis, which employs an exclusive system of radius rod construction, the rods, instead of being centered on the rear axle being supported by short vertical arms, which thus enable them to take the torque re-

known, both the E-M-F and Flanders cars are equipped with such approved features as sliding gear transmission, shaft drive, magneto ignition with battery as a reserve. The larger car is formed with its engine cylinders cast in pairs, but the Flanders has a block type of motor which is very neat and compact. Both chassis have the change gear mounted on the rear axle.

One of the most original machines in the show is the little Brush runabout, which



WHERE MOTOR CARS AND ACCESSORIES MEET—IN THE GALLERY

compact and allows greater accessibility. Aluminum valve rod covers, easily detachable, also have been added, together with a service brake equalizer, aluminum running boards and new style fenders. The clutch is multiple disk, as heretofore, and the transmission is of the selective type, allowing four speeds forward with an overstep fourth speed, i. e., direct on third speed. A new seven-passenger touring car is shown, equipped with front doors and a dash that is specially built for the windshield. The tires are 36 x 4½ inches, and the wheelbase is 120 inches.

Among a number of innovations which have been made in the construction of the Columbia car since it last was shown is a novel and highly ingenious method of concealing the gas tank and battery box on the running board. To this end a special sheet steel filler strip of arched contour is employed between the running board and the frame, and the tank and storage boxes are mounted beneath it, suitable doors

assistance as well as the traction load. The propeller shaft, naturally, is equipped with two universal joints.

Remain unchanged in design from last year, the E-M-F and Flanders cars retain those peculiarly ingenious features which first served to call particular attention to them when they were respectively launched into the market. The roadster model of the 30 horsepower car is now, as is the small tonneau model, made both in solid and demountable tonneau forms. With its oval rear fuel tank, skuttle dash, large guards and I-beam section levers, the roadster, in particular, is a strikingly neat and attractive machine. The fact that the price of the line has been reduced to \$1,000 from \$1,250, also adds to its attractiveness in the estimation of the intending buyer. In the case of the Flanders also, a price reduction has taken place, the new figure being \$700, or \$50 less than formerly. Instead of a single model, four are now produced, with the standard chassis as a basis. As is well

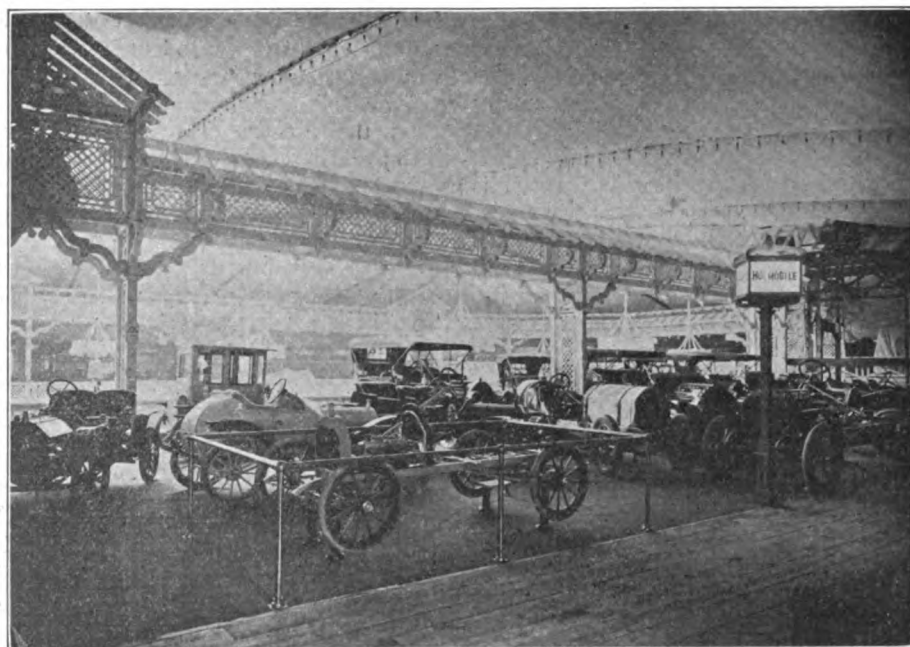
in addition to its originality has the merit of the features that have lent distinction to it from the very beginning. Such points as wood frame and axle construction, helical springs, single cylinder motor with independent counterbalance and left drive and control, have ceased to be novelties as far as this particular product is concerned, and are now of recognized merit. About the only change to be found this year is in the provision of an adjustable tie rod under the front axle. In common with other of the products of the United States Motor Co., Brush prices have undergone a recent reduction and now stand at \$450, as against \$485 formerly for the model E, with corresponding reductions for other models.

A new car, coming to the show almost unheralded, is the Sampson 35, which is the product of the Alden Sampson Manufacturing Co., hitherto exclusively a manufacturer of commercial vehicles of the heavier order. The new Sampson pleasure car is

of the medium weight, medium power and medium price class, with four cylinder block motor, thermo-syphon cooling, magneto ignition and selective change gear. The latter is mounted on the rear axle and is of approved form and pattern, its connection with the motor being through the medium of a plain cone clutch and propeller shaft enclosed in a stout torsion tube. The frame is dropped to give low center of gravity for the body, and the carriage work shown on the standard touring car is of highly creditable closed front form.

To get rid of the exhaust gases in the best manner is a problem to the solution of which no small amount of time has been given. The outside of the exhaust manifold on the Royal Tourist motor has nothing to indicate that its designers have concealed within any unusual method of exhausting, but, nevertheless, that constitutes a feature of the car; each outlet is provided with an individual pipe extending along the manifold, preventing the gas from driving back into another cylinder, and insuring that the exhaust is driven out in the right direction. This creates a suction which assists in clearing the cylinders instead of clogging them. On the cars for this season no radical changes have been made, but a few improvements are in evidence. The Bosch double system is used for ignition instead of a dual system; differential brake equalizers and grease cups on springs and shackles have been added, and the brakes have been made larger. On the steering wheel column is mounted the horn bulb, the tube runs down through the column and along the inside of the chassis frame to the horn in front. The motor develops 66 horsepower; the clutch is of the cone type; the transmission selective, giving four speeds with direct on high. The wheels are $36 \times 4\frac{1}{2} \times 5$ inches, and the wheelbase 126 inches.

That the use of long-stroke motors is increasing is undisputed, but the name, long-stroke, as applied to some motors, is not beyond dispute, and is open to discussion. However, that the name aptly applies to the motors now used in the Moline cars is amply borne out by the fact of the cylinder dimensions, which are four inches bore and six inches stroke, as against the same bore with four and one-half inches stroke, which was used last year in these cars. This constitutes the principal change in the Moline cars, three of which are shown. Wheel sizes have been increased, too, and the wheels now are 36 inches in diameter. The former straight frame has been replaced by one with a two-inch drop, and the wheelbase has been lengthened to 142 inches, thereby adding to the pleasing appearance and easy riding qualities of the cars. The brakes also have received attention and have been increased in diameter from 12 inches to 14 inches. Three-

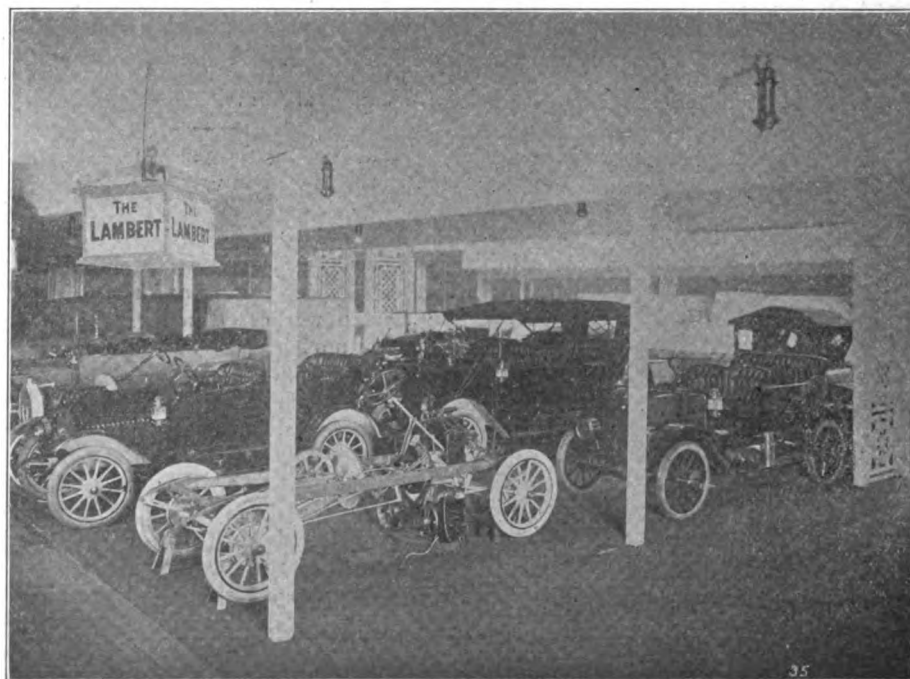


WHERE THE HUPMOBILE PRODUCTS ARE WELL DISPLAYED

speed, vertical, selective transmission is retained, as is the Hill Precision oiler by means of which lubrication is effected. Conforming with the latest practice two distinct systems of ignition now form part of the regular equipment and embrace a Splitdorf high-tension magneto and storage battery with single unit coil and distributor operating through two sets of plugs. Most conspicuous of the three cars shown is a big gray closed-front touring car with a small scuttle dash. Gear shift and emergency brake levers are placed outside, and the high straight line body has a clean appearance not easily excelled.

The designation "the thousand-man car"

is almost irresistible in its logical application to a product for which no exclusive features are claimed, but only the wise selection of such features as are found on other products. The phrase is applied to the Marion cars, which are a solid and clean-lined offering, equally free from radical or obviously objectionable features of any sort. The new Marion, only one example of which is at the show, is built in either closed-front or open-front patterns, the former having the levers in the center, and, therefore, at the driver's left hand. The general construction otherwise is about the same as that of last year, with the exception of equipment, which is improved in value. One instance of this latter point is

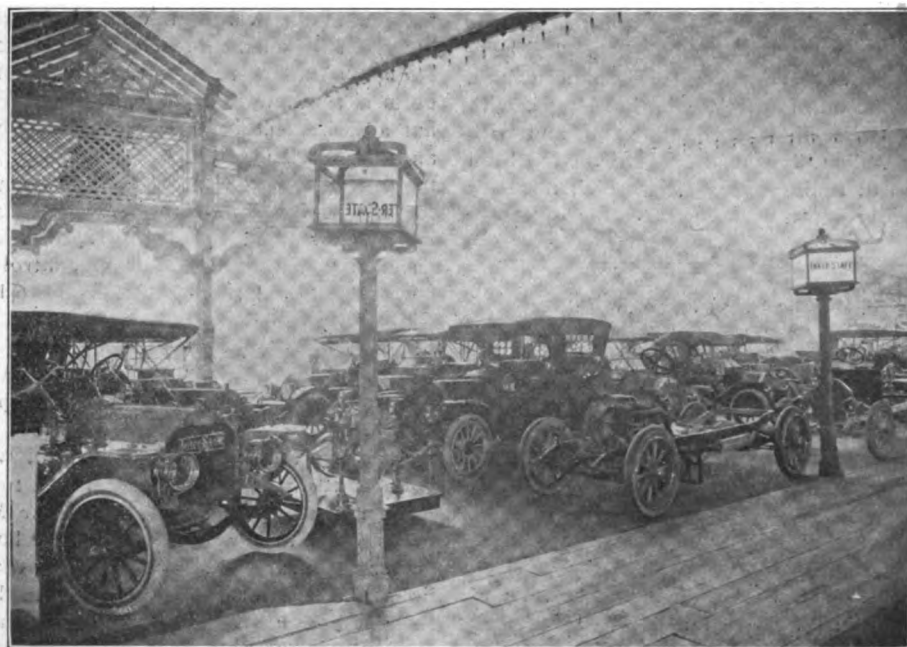


WHERE THE LAMBERT FRICTION DRIVE IS DEMONSTRATED

the magneto, which now is of the Bosch pattern, on the 40 horsepower car. The complete line, which is based on two distinct chassis, or three, if differences in wheelbase be considered, affords an option of no less than 13 different styles of body.

An original suspension of the motor and transmission unit constitutes a feature of the Midland "40." The two forward points are supported by trunnions with a block in a bracket, and the rear point of support is a ball and socket joint. When the frame is twisted, the ball joint gives the necessary flexibility at the rear point, and the blocks at the forward points of support slide back and forth in the brackets placed in the chan-

nel of the rear of the motor instead of in front, as formerly. By the new arrangement the fly wheel, which with the well-balanced six cylinder motor need not be particularly heavy, is entirely enclosed, so that no moving mechanism in the driving line is in sight. A noteworthy feature of the gear shifting arrangement, which should be mentioned in the same connection is that no sliding rods are used in actuating the shifting arm, the latter, which is progressively operated, having a rotating motion and so requiring only a plain bearing in the case. The carburetter now is water jacketed, the supply being taken from the third cylinder and returned directly to the radiator.



THE STRIKING INTER-STATE EXHIBIT IN THE BALCONY

nel section of the main frame. The front axle is a double channel section. A worm, nut and segment steering gear is used. Another original Midland creation is an oil tell-tale on the dash. The oil is pumped into the bottom of a small cylinder attached to the engine base, the pressure raises a piston before the oil can flow out near the top of this cylinder to the crankcase, and a small rod attached to the piston operates the tell-tale. The latter shows white when oil is flowing, but when the motor is stopped or oil ceases to flow, it shows red.

Stevens-Duryea cars are of the constant type insofar as design and quality are concerned. As the first exponents of the principle of three-point suspension applied to the unit type of power plant, they have remained practically unchanged in general construction for more years than many cars have been in existence. Among the slight alterations that have been deemed expedient in connection with the production of the current models, however, may be mentioned the placing of the fly wheel at

The method of supporting the power plant in the chassis is noteworthy in that it is absolutely exclusive. The motor and gear case are joined in a continuous barrel housing, which also encloses the master clutch as well as the fly wheel, before mentioned. The forward end of the unit is carried on bearings on the main frame slightly to the rear of the front of the crank case. The rear end is supported from below on a pivot bearing which is carried by a dropped cross member of the frame. The torsion rod, which is necessary as the propeller shaft is formed with two universal joints, is coupled at its front end to the same cross member by means of a rather long vertical link, embodying spring cushions, which is connected to the frame at its lower end. Contrary to general practice, the torque member is carried on the right side of the driving shaft, though why there should be a more general tendency to place it on the left is difficult to see.

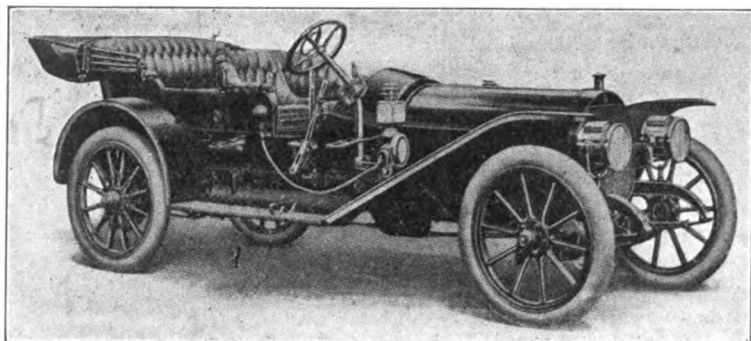
In that its makers never before have produced a shaft-driven car, the Simplex

exhibit is a striking departure from previous practice. Only the chassis is shown. The motor is a four-cylinder, "T" head type, developing 38 horsepower. The cylinders are $4\frac{1}{4} \times 6\frac{1}{2}$ inches, cast in pairs. Of the 50 horsepower, chain-driven models, there are six shown, including a chassis, a front-door limousine, with a new center-gear shift arrangement, a yellow roadster, striped in black, a landaulet, a four-passenger tourabout and a town car. All are equipped with electric lights.

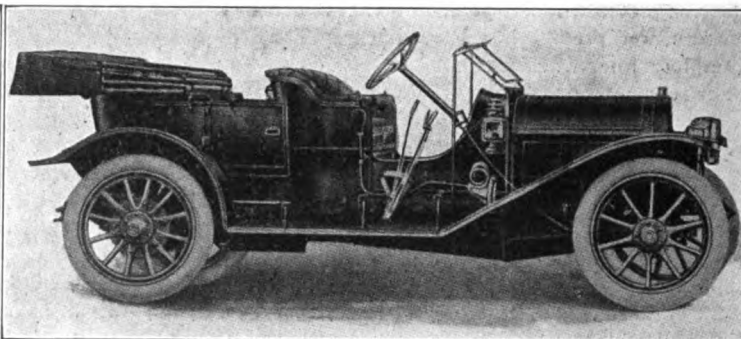
One of the growing class in which the long-stroke type of motor is advocated is the Lozier, two chassis of which are shown, one with a 46 horsepower, four-cylinder, and another with a 51 horsepower, six-cylinder motor. The stroke has been made still longer in the new motors, the smaller being $5\frac{3}{8} \times 6$ inches, and the larger $4\frac{5}{8} \times 5\frac{1}{2}$ inches. These chassis reveal not only new radius rods and aluminum water connections on the cylinder heads, but also a continuous aluminum pan for protection to the machinery, the enclosed propelling shaft, semi-elliptic springs and other features. The motors have ball bearings. The Lakewood torpedo is a four-passenger car, or rather was until a chauffeur's seat was provided. This is a unique arrangement of the left tonneau door, whereby it will fold outward and downward with a collapsible back, making a seating capacity for five passengers. The control is on the right side, with the levers on the outside of the front door, this door being so curved that it allows the levers to set in closely.

The 1911 Autocar is a careful development of previous models, and its design and construction is in accordance with the well-known methods of the company building it. Although a number of changes have been made, each represents a decided improvement. For instance, a three-quarter platform spring has been introduced, the wheelbase lengthened to 117 inches and the wheels increased to 36 inches. The body is unusually long and spacious and of good lines. It is so designed that front doors may be added or taken down by a simple adjustment. It has a seating capacity of five passengers. The motor, which has its inlet valves in the head and the exhaust in the side, develops 30.6 horsepower, and has four cylinders, $4\frac{3}{4} \times 4\frac{1}{2}$ inches, cast in pairs. A double ignition system is used, one with Bosch high-tension magneto, and the other with an Atwater Kent Uni-sparker. A dry-plate clutch and three-speed selective transmission are employed.

In the Hotchkiss, one of the two imported cars in evidence, foreign practice is revealed in that there is but one brake in the internal drums; the other is a band around a drum on the transmission shaft. A new 20-30 horsepower model has been added to the line, but it differs from the



MATHESON "SIX" TOY TONNEAU



CADILLAC "30" SMALL TONNEAU

others chiefly in respect to the motor, which has six cylinders cast in pairs, with the valves, which are all on one side, enclosed, but having detachable covers. The oil reservoir is in a new position located under the hood on the front side of the dash. By an exceptionally heavy construction of the semi-elliptic springs, all torque bars or tubes are eliminated. The small town car of 12-16 horsepower has its small motor case en bloc.

The striking part of the Mercer exhibit is the new "raceabout" finished with a yellow and black striped body. A 30-gallon tank is carried behind the extremely low, tilted seats, and the creation is smart and very rakish in appearance. The wheels are 34 inches, and the wheelbase 108 inches. A small tonneau and a limousine are shown also. As far as mechanical changes are concerned, the Mercer improving hand is shown in the manufacture of an engine of its own design, which replaces the stock motor previously used in the "raceabout" and small tonneau cars. It is of the conventional "T" head type, four cylinders, $4\frac{3}{8} \times 5$ inches, cast in pairs, and is rated at 30 horsepower.

The most imposing member of the hale and hearty Oldsmobile family is, of course, the big six-cylinder, 60 horsepower Limited, with a seating capacity of seven, a wheelbase of 138 inches and $42 \times 4\frac{1}{2}$ inch tires, and which, like the other members of the line, is distinguished by a new engine; its A. L. A. M. rating is 60 horsepower, but it will develop nearer 90, as the cylinders are 5×6 inches. The car is shaft driven, has

a straight-line drive when loaded and four speeds ahead. The Oldsmobile Autocrats have four-cylinder, 40 horsepower motors, tires $38 \times 4\frac{1}{2}$ inches and a 124-inch wheelbase. The 1910 engine was of the "L" head pattern and comparatively small valves, the new one is of the "T" head type, with 5×6 -inch cylinders cast in pairs, and with large valves, $2\frac{3}{4}$ inches. A change has been made in timing gears also, which now are helically cut, a system promoting quiet op-



BRUSH \$505 RUNABOUT

eration. The Bosch dual system remains the standard form of ignition on all models.

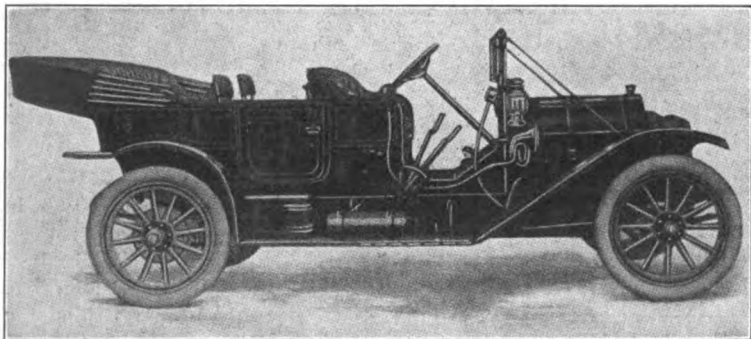
Such is the stability of the Winton "Six" that few changes have been made in the chassis; these comprise a new type of radiator of honeycomb style, and it is supported by a cross member of the main frame. A lower suspension is obtained by raising the frame over the rear axle, and the front axle is now drop forged. Larger brakes have been provided, and the drip pan is detachable. Mechanical tire inflation and the self-starting device remain Winton features.

One of the two friction driven cars ex-

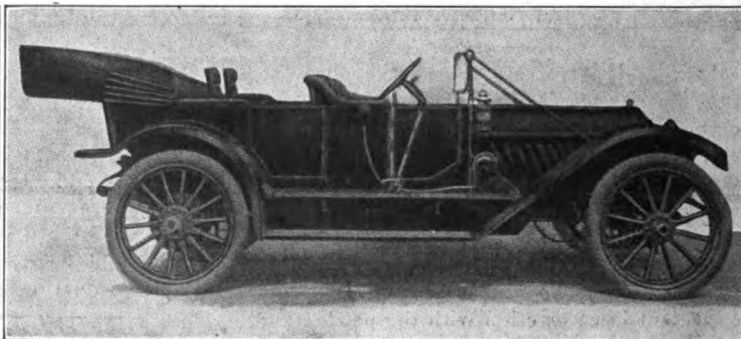
hibited, and one which has successfully weathered the tests of nine years with no radical changes in design of transmission, is the Lambert. Several models and electrically driven demonstrating chassis are shown. Probably the most interesting of the Lamberts is the new four-passenger torpedo. It has a 35 horsepower motor, 34-inch wheels and a wheelbase of 115 inches. In this motor the crankshaft has ball bearings, a feature which is new this season. To all models, including the 40 horsepower cars, an emergency brake with lever control has been added, and the wheelbases have been slightly increased.

Although the Knight sliding valve engine was slated to be shown as the power plant of a Mercedes "40," nevertheless, those who were interested enough to look for it were doomed to disappointment; it failed to put in an appearance. Of interest at the Mercedes exhibit, however, were a 15 horsepower town car and a 20 horsepower coupe-limousine, the former with a German built body and the latter with one built by American manufacturers.

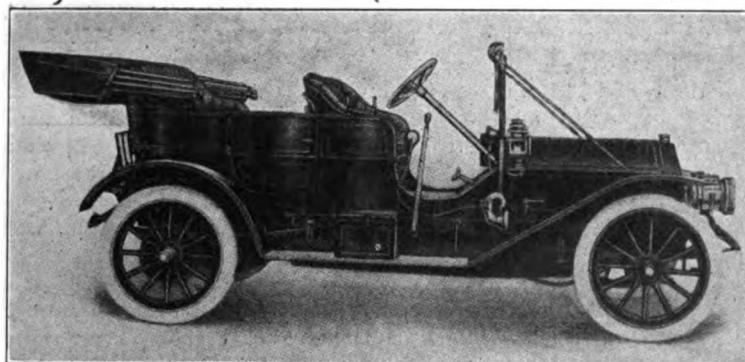
Although none of them are radical, several changes mark the Peerless line. In the motor, for instance, the bore has been increased from $4\frac{7}{8}$ inches to 5 inches, the stroke, $5\frac{1}{2}$ inches, remaining the same. The front main bearing has been changed from ball to plain, making three plain bearings in the four-cylinder and four plain bearings in the six-cylinder motor. Lubrication is now performed entirely by splash, the cylinder feeds having been eliminated and the droppers on the dash reduced in num-



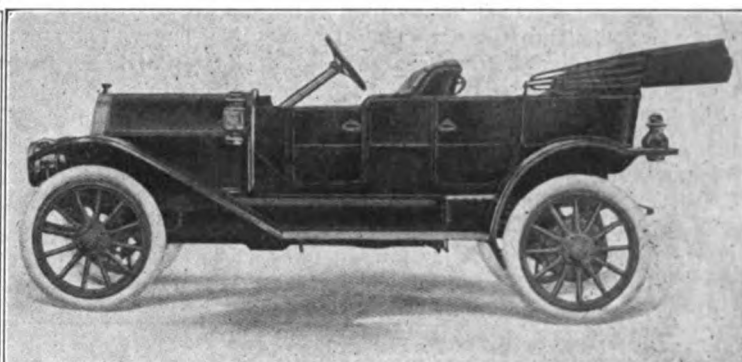
HAYNES SEVEN PASSENGER TOURING CAR



OLDSMOBILE SEVEN PASSENGER LIMITED



CARTERCAR OPEN TOURING CAR



OAKLAND FRONT DOOR TOURING CAR

ber from five to two. Perhaps the most notable innovation on the Peerless is a four-cylinder mechanical air pump for inflating the tires. It is started by a small lever which operates the clutch, the latter connecting the air pump with one of the auxiliary motion shafts of the engine.

Four Chadwick cars are in evidence, but the one which attracts the most attention at this exhibit is the one which was driven by Lew Zengle when he won the Fairmount Park race. The other three are a five-passenger touring car, a seven-passenger front-door touring car and a two-passenger runabout. The latter is strikingly finished in white, with red gear and striping, and a big 52-gallon gasoline tank on the back adds to the eye-catching attributes of the car. In the Chadwick six-cylinder, 60 horsepower motor the size of the valves, which are located in the head, has been increased to $3\frac{1}{2}$ inches, and the distributor and pump are in a more accessible location at the front of the motor; otherwise the changes are inconsequential.

No important changes have been made in the Cadillac, but power has been added by increasing the engine bore from $4\frac{1}{4}$ to $4\frac{1}{2}$ inches; double ignition has been added; tires increased to 34×4 inches, and the wheelbase increased to 116 inches. As heretofore, the features of the motor are copper water jackets, a five bearing crankshaft and three-point suspension of motor and radiator. Five different models are shown—a touring car and small tonneau, a

front-door touring car, a torpedo and a limousine. There also is a cutaway chassis exposing the various working parts.

One of the striking features of the Selden car is the form of the intake manifold, which is of T-shape, but designed with the intersection of the vertical and horizontal arms in the form of a rather large sphere. The principle involved, of course, is that of creating a swirling, or churning, motion



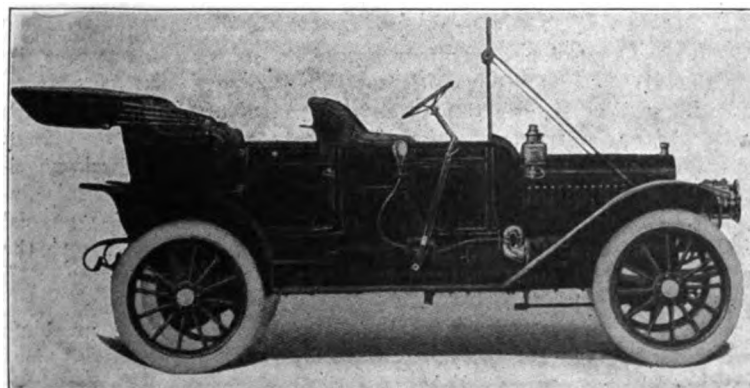
REO ONE CYLINDER RUNABOUT

in the gas as it moves toward the cylinders, with the object of mixing it thoroughly and completing the vaporizing process. The power plant is carried on a sub frame, the clutch shaft being connected to the gearset by means of a special form of coupling which permits the clutch to be dropped without disturbing either the engine or transmission. A noticeable feature of the clutch mounting is the method of control, which employs a long forged yoke, which is pivoted to the left side of the frame, attached to the disengaging collar at its center and to the pedal rocker arm

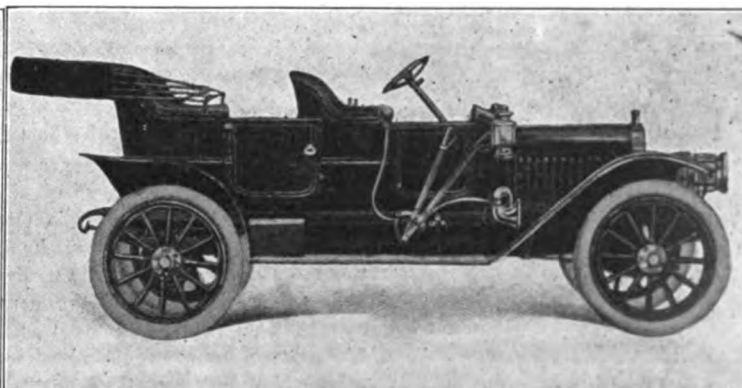
on the right. The final drive is through a double jointed shaft, the torsional stresses being taken up by a plain torque bar, the tractional driving effort, however, being effected through the front ends of the three-quarter elliptic rear springs. The carburetter, drop frame, rear springs, and axles are newly designed. Also there has been a slight increase in wheel base in order to accommodate the new closed-front bodies.

As is the case with most of the 1911 productions, the Buicks, always a likely-looking lot, are distinguished from their predecessors chiefly in the matter of body. The mechanical improvements are inconsequential. The valves have been larger and are provided with a gasket to prevent any possibility of leakage. The oiling system has been slightly changed so that the oil flows from the lowest end of the motor back to the other end by a channel, making a constant circulation. The newest Buick, which sells for \$575, is not exhibited.

Two new models—one of 40 horsepower and one of 20 horsepower, the latter employing an underslung frame, and the original 30 horsepower chassis with a new closed-front body comprise the chief factors of interest of the Regal exhibit. The underslung model is shown with a two-passenger torpedo body, and its frame is suspended by semi-elliptic springs resting upon the top of the axles. The motor is cast en bloc in the small car only. The other models are uniform and have "L"



MAXWELL 30 HORSEPOWER TOURING CAR



MAXWELL 25 HORSEPOWER TOURING CAR

head motors, cast in pairs. Among the changes effected are the use of an I-beam front axle, a semi-floating rear axle and larger brakes. The tires of the "40" are 34 x 4 inches, and the wheelbase is 123 inches. The other models have 32 x 3½-inch tires and 107-inch wheelbase, except the "20" which has a 100-inch wheelbase.

Except in respect to bodies and minor details, the Ohio exhibit discloses nothing in the way of innovation. Cars are shown in both the 35 and 40 horsepower sizes. The torpedo is finished in battleship gray with white striping, and embodies the straight-line design. The 35 horsepower roadster with deep skuttle dash is tally-ho red. The 40 horsepower chassis differs somewhat from that of last year in that the front axle is an I-beam drop forged, and the rear is of the full-floating type with a one-piece differential housing. A torque bar replaces the tube. An increase has been made in size of bore—from 4¼ to 4½ inches, and gives a corresponding increase in power. The stroke remains 4¾ inches.

With a 40 horsepower chassis harnessed to an electric motor, the Cartercar company is demonstrating its system of friction transmission in instructive fashion. The principle is simple. A metal disk is mounted on an extension of the crankshaft of the motor; a compressed paper fiber-faced wheel is set at right angle to the disk, upon a shaft, supported by the main side members of the frame, and it engages the surface of the disk. The pressure is regulated by the foot through a pedal, according to the power demanded by the conditions. A lever controls the speed of the wheel as it moves it from or toward the center of the disk. The shaft upon which the wheel is mounted is connected to the rear axle. The value of the Cartercar system, which has prevailed where so many others have failed, has been increased by the use of a silent single chain in oil for the purpose of transmitting the driving power from this shaft to the rear axle. On all cars for this year the rear axle is changed to the full-floating type, and the front axle to an I-beam section. The new 40 horsepower, five-passenger model sells for \$1,875, and is equipped with front doors, has a straight-line body, 36-inch wheels and a 120-inch wheelbase.

While the little Hupp runabout finished in baby blue is the eye-catcher of the Hupmobile exhibit, the real and newest feature is the big Hupmobile, the touring car brought out between shows, and which really is making its first conspicuous public appearance this week. Although the new-comer is much larger than the "little fellow," it employs the same 20 horsepower power plant; however, the frame and radius rods have been lengthened and strengthened to meet the demands of the increased

wheelbase of 110 inches and a five-passenger body. The motor has not been changed materially, but improvements have been made in several parts of the chassis. Both the clutch and the valve stems now are adjustable, and the efficiency of the brakes has been increased. The single rear cross spring is retained, but an inverted leaf is secured to the top of the spring, and it bears up firmly against the underside of the rear cross member of the frame. In ad-

mounting of the change gear lever, by the way, is protected by a neat aluminum housing.

The dimensions of the 20-30 engine are 3¼ by 5½ inches, bore and stroke, the stroke thus being a little over 1½ times the bore. Owing to this ratio the power actually developed is greatly in excess of that to be expected by applying the A. L. A. M. formula, and the same is true of the new motor, in which about the same relative proportions have been preserved. Both engines are of the block type, equipped with magneto ignition, automatic lubrication, compression release for easy starting, and other approved features, and are very neatly assembled. The leather-faced cone clutch is original in that the leather is secured to the cone by means of T-headed lugs which are sunk in depressions in the periphery. The construction permits of ready replacement of the leather, while rendering the operation extremely simple.

So nicely is it possible to regulate the new oiling system, which just has been introduced on the Premier engines, that it is said to be possible to regulate the width of the carbonized ring at the top of the pistons to within a sixteenth of an inch. The system is that in which spoons, or scoops, on the under side of the connecting rods dip into little troughs and raise a small quantity of oil at each revolution. Distribution is effected through little pockets on the bearings into which the lubricant is splashed and from which it is led to the usual feeding points. As the troughs in the case overflow, the surplus drains back into the reservoir in the base, from which it is returned, after being strained, by means of a gear-driven centrifugal pump which is mounted outside the case for the sake of accessibility. Carrying out the use of cork inserts, which hitherto have been applied only to the internal expanding rear wheel brakes, the multiple disk now is fitted with compressed cork plugs, the clutch having been redesigned in order to accommodate this feature.

The wheel base on the four cylinder model has been increased slightly, while the wheel sizes have been brought up to 36 by 4½ inches on the touring model and 36 by 4 on the roadster. One innovation of a minor nature which is apt to attract the curiosity of the showgoer, is the prolongation of the lower leaf of the upper section of the three-quarter elliptic rear springs, the protruding end being bent back parallel to itself. This, it is explained, is intended to receive the shocks of a special bumper mounted on the axle adding to the natural resiliency of the gutta percha.

The Jackson is one of those products that is built in a variety of types and sizes to suit a variety of needs. Likewise it is one that does not undergo very material

CENSUS OF THE SHOW.

Total Exhibitors	396
Exhibitors of Cars	67
Exhibitors of Accessories	329

GASOLINE CARS.

Gasolene:	
One Cylinder	4
Two Cylinder	1
Two Cylinder (two cycle) ..	2
Four Cylinder	205
Four Cylinder (two cycle) ..	11
Six Cylinder	40
Steam	1

Total Pleasure Cars

Landulet	5
Touring (open)	39
Touring (closed)	86
Torpedo	34
Runabout	25
Roadster (closed)	18
Coupe	8
Limousine	32
Small Tonneau	10
Racing Type	2
Enclosed Cars	4
Victoria	1

264

Air Cooled Cars	4
Water Cooled Cars	260

CHASSIS.

One Cylinder	1
Four Cylinder (two cycle) ..	2
Four Cylinder	41
Six Cylinder	12

56

dition to the Hupp touring car and the Hupp runabout, there is also exhibited the Hupp coupe, finished very attractively in white. A striping of gold and black offsets the white, as also do the nickel trimmings. The leather seats, silk curtains and whipcord upholstery inside are white.

In addition to the White 20-30 gasoline car, there is shown for the first time the new White 40, which like its smaller sister car, is of the true long stroke motor type, and in all other respects save one is practically a larger version of the same design. The exception is that the 40 is fitted for left hand drive, the gear shifting lever being placed at the driver's right hand and, therefore, in the center of the foot board, while, by a most unusual construction, the emergency brake lever is placed at the left end of the foot board. The opening through the floor which is essential to the

changes from year to year. As a matter of fact, it is now presented in no less than seven distinct models, several of which are amplified by certain options in body construction. One such is the model 51, which may be had either as a standard touring car, a convertible torpedo with detachable front doors and side panels or a roadster with skuttle dash. The special features which characterize the line as a whole are unit power plant construction, thermo-syphon cooling, low tension magneto ignition with transformer coil and full elliptic springs. Two of the motors are of the valve-in-the-head type, with overhead cam shafts; two are of the L-type, with valves arranged on one side, and one, model

25, has a neat form of motor which is cast en bloc. The model 38 car, which is of the full torpedo pattern, and rather strikingly designed as to carriage work, is fitted with left hand drive with center control, this being a new feature this year.

By leaving open the sides of the water jackets and facing off the flanges which are formed on the cylinder castings, the Pullman motors may be assembled in groups and fastened through from end to end, to give practically the effect of a block casting. The arrangement has this advantage over the block system, however, that the cylinders may be replaced individually, if necessary, so that the plan has certain advantages from the owner's point of view

that the block method does not possess. The Pullman line, which consists of three distinct chassis, is not subject to material alteration from year to year. An example in point is the model K, the wheel base of which has been increased from 112 to 115 inches since last year, while the shape of the bottom pan of the motor has been altered somewhat, the headlight brackets have been raised, and the shape of the doors has been changed to give a more nearly straight line effect. Indeed, the most conspicuous distinction of the new models is in the body styles, which, naturally enough, have been brought into the prevailing mode, being designed in closed-front and torpedo effects.

Summary of Cars Displayed at the Garden Show and of Their Chief Characteristics

American Locomotive Co., New York City—Five Alco water-cooled, shaft-driven cars. One each four-cylinder, 40 horsepower touring car and limousine; one each six-cylinder, 60 horsepower, closed-front touring car and limousine; one racing car and one chassis. Features: One piece forging rear axle; Bosch dual ignition. Mechanical changes: Perfected shaft drive; new carburetter; motor level; cylinders in four-cylinder cars increased to $5\frac{1}{8} \times 5\frac{1}{2}$ and larger valves. Price range, \$2,750-\$4,000.

American Motor Car Co., Indianapolis, Ind.—Three American four-cylinder, 50 horsepower, water-cooled, shaft-driven cars. One each underslung runabout and closed-front touring car and one chassis. Features: Underslung frames; dual ignition. Mechanical changes: Concealed oiling system; longer wheelbase; forged front axles. Price range, \$4,250-\$5,250.

Atlas Motor Car Co., Springfield, Mass.—Three two-cylinder, water-cooled, shaft-driven cars. One each two-cylinder, 20 horsepower, landaulet runabout and four-cylinder 40 horsepower closed-front touring car. Price range, \$1,250-\$2,500.

Auto-Car Co., Ardmore, Pa.—Two four-cylinder, 30 horsepower, water-cooled, shaft-driven cars. One each touring car, closed-front touring car and chassis. Mechanical changes: Selective transmission; engine stroke increased; platform springs in rear; longer wheelbase. Price range, \$2,250-\$2,350.

Brush Runabout Co., Detroit, Mich.—Four Brush single-cylinder, water-cooled, chain-driven cars, and one Sampson, closed-front touring car. Three Brush runabouts, one Brush coupe and chassis, and one Sampson chassis. Price range: Brush, \$450-\$850; Sampson, \$1,250.

Buick Motor Co., Flint, Mich.—Five Buick four cylinder, water cooled, shaft driven cars. One each 30 horsepower, closed front touring and runabout, one 24 horsepower touring, one 18 horsepower, closed front runabout and one chassis. Features: Three-point suspension; two torque bars. Mechanical changes: New oiling system; larger valves. Price range, \$800-\$1,850.

Cadillac Motor Car Co., Detroit, Mich.—Five Cadillac, four-cylinder, 30 horsepower, water-cooled, shaft-driven cars. One each closed-front touring, limousine, torpedo, touring, toy tonneau touring and one chassis. Features: Copper water jackets, five bearing crankshaft; three-point suspension of motor and radiator;

platform springs. Mechanical changes: Bore increased from $4\frac{1}{4}$ to $4\frac{1}{2}$ inches; wheelbase from 110 to 116 inches; tires from 32 to 34 x 4; double ignition. Price range, \$1,700-\$3,000.

Cartercar Co., Pontiac, Mich.—Four four-cylinder, water-cooled, single-chain driven cars. One 30 horsepower touring car; one 40 horsepower, closed-front touring car; one 30 horsepower, closed-front runabout; one 30-35 horsepower touring car and one chassis. Features: Friction transmission; noiseless chain-in-oil drive. Mechanical changes: "M" engine increased to 40 horsepower; wheelbase to 120 inches; three-quarter elliptic springs; 36-inch wheels; three sets brakes. Price range, \$1,150-\$1,875.

Chadwick Engineering Works, Pottstown, Pa.—Four Chadwick, six-cylinder, 60 horsepower, water-cooled, chain-driven cars. One each touring, closed-front touring runabout racer and chassis. Features: Copper water jackets governor on magneto; expanding band clutch; automatic gear shift ratchet; double bevel transmission and enclosed double chain drive; mechanical air compressor for gas tank pressure. Mechanical changes: Large inlet valve in head of motor; larger oil capacity; compression release; distributor and pump more accessible; more powerful clutch brake and longer wheelbase. Price range, \$5,500-\$6,500.

Chalmers Motor Car Co., Detroit, Mich.—Five Chalmers water-cooled, shaft-driven cars. One each 30 horsepower, closed-front runabout; coupe limousine, closed-front touring; one 40 horsepower torpedo and two chassis. Features: Two bearing crankshaft; single pedal control on 30 horsepower models. Mechanical changes: Encased valves and torsion tube on 40 horsepower models; Bosch dual ignition and new carburetter on 40 horsepower models; plunger oil pump on 30 horsepower models and larger frame on both. Price range, \$1,500-\$3,000.

Columbia Motor Car Co., Hartford, Conn.—Four Columbia four cylinder, 38 horsepower, water cool, shaft driven cars. One each closed front touring, torpedo, limousine and touring with scuttle dash. Features: Tool box and storage batteries carried under apron to running board; drop forged differential housing and wheel hubs. Mechanical changes: All bodies vestibules. Price range, \$3,300-\$4,900.

Corbin Motor Vehicle Corporation, New Britain, Conn.—Five Corbin four cylin-

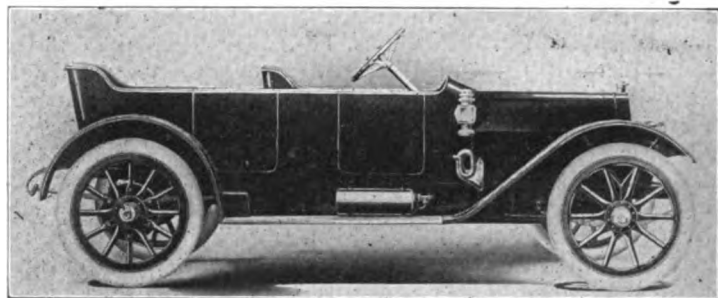
der, water cooled, shaft driven cars. One each 30 horsepower, closed front runabout and closed front, toy tonneau touring; one each 40 horsepower torpedo, closed front touring and limousine, and one chassis. Features: Multiple leverage for clutch and brake levers; clutch brake; locking device in transmission. Mechanical changes: One model 40 increased stroke; cylinders in pairs; adjustable pedals, and self-contained oiling system. Price range, \$2,000-\$4,000.

Daimler Import Co., New York City—Three Mercedes water cooled cars. One four cylinder, 70 horsepower, chain driven torpedo; one four cylinder, 15 horsepower, shaft driven landaulet; one four cylinder, 20 horsepower limousine, and one chassis. Price range, \$4,000-\$8,750.

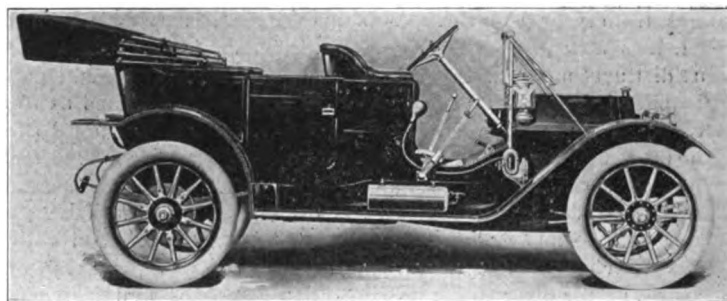
Dayton Motor Car Co., Dayton, Ohio—Ten Stoddard-Dayton four cylinder, water cooled, shaft driven cars. One each 50 horsepower runabout and enclosed limousine, one each 40 horsepower torpedo and coupe, one each 20 horsepower runabout, closed front touring, touring and convertible touring, and one 30 horsepower, closed front touring. Features: 40 and 50 horsepower models; valves in head; gear driven oil pump; double Bosch ignition. Thirty horsepower models—"L" head motor; cylinders in pairs; Bosch dual ignition. Twenty horsepower models—Intake and exhaust passages in casting; barrel type aluminum crankcase. Mechanical changes: Wheelbases on 30, 40 and 50 horsepower models increased to 114 inches, 120 inches and 130 inches respectively; gear driven oil pump; heavier springs; heavier spokes in rear wheels. Price range, \$1,700-\$4,200.

Elmore Mfg. Co., Clyde, Ohio—Four Elmore two cycle, four cylinder, water cooled, shaft driven cars. One each 50 horsepower, closed front touring and toy tonneau; one each 30 horsepower touring and runabout, and one chassis. Features: Two cycle motor without crankcase compression; multiple disk clutch; high-tension magneto ignition. Mechanical changes: Multiple disk instead of expanding band clutch; clutch and transmission in unit housing; Bosch high-tension magneto added. Price range, \$1,200-\$1,750.

Elmore Motor Car Co., Clyde, Ohio—Four Elmore two cycle, four cylinder, water cooled, shaft driven cars. One each 50 horsepower, toy tonneau touring, and closed front touring; one each 30 horsepower touring and runabout, and one



NEW CHALMERS 40 HORSEPOWER TORPEDO



CHALMERS STANDARD TOURING CAR

chassis. Features: Two cycle engine. Price range, \$1,200-\$1,750.

Franklin Mfg. Co., H. H., Syracuse, N. Y.—Four Franklin air cooled, shaft driven cars. One each four cylinder, 25 horsepower runabout and closed front touring car; one six cylinder, closed front touring car, and one six cylinder, 38 horsepower touring car. Features: Auxiliary exhaust; air cooling; full elliptic springs; wood frame; extra large tires; gasoline tank lock; Prest-O-Light tank in tool box; control lever inside on six cylinder models; ventilators in dash; running board in two sections for expansion; front doors. Mechanical changes: Drilled crankshaft; engine more accessible; intake and exhaust valves separate; endless suction yoke to carburettor on models H, D and M; Bosch dual ignition automatic auxiliary air intake. Price, \$1,950-\$4,500.

Garford Co., Elyria, Ohio—Three Garford four cylinder, water cooled, shaft driven cars. One each 30 horsepower, closed front touring and limousine; one 30 horsepower touring and one chassis. Features: "T" head motor; force-feed oiler; long leverage for clutch and brakes; brakes equalized. Mechanical changes: Carburettor air adjustment controlled from dash; Bosch dual ignition; automatic crank release; tapered rear axles; longer wheelbase. Price range, \$3,000-\$3,500.

Hotchkiss Import Co., New York City—Two Hotchkiss water cooled, shaft driven cars. One four cylinder 12-16 horsepower landaulet; one six cylinder, 20-30 horsepower limousine, and one chassis. Features: Semi-elliptic springs; no torsion rods or torsion tube. Mechanical changes: Valves enclosed; knob shifting speed lever to prevent slipping into reverse. Price range, \$4,750-\$9,250.

Hudson Motor Car Co., Detroit, Mich.—Four Hudson four cylinder, 33 horsepower, water cooled, shaft driven cars. One each torpedo, touring, runabout and closed front touring. Features: Valve mechanism enclosed; magneto on trans-

verse shaft in front of engine; flywheel fan. Price range, \$1,000-\$1,600.

Hupp Motor Car Co., Detroit, Mich.—Four Hupmobile four cylinder, 20 horsepower, water cooled, shaft driven cars. One each touring, closed front touring, coupe, runabout and chassis. Features: Unit power plant; flywheel in front; offset cylinders quantity oil feed from tank on side of cylinders; fixed spark with Bosch high-tension magneto; thermo-syphon cooling; single semi-elliptic spring across rear. Price range, \$775-\$1,125.

Inter-State Automobile Co., Muncie, Ind.—Six Inter-State four cylinder, water cooled, shaft driven cars. One each 40 horsepower runabout, touring, touring with skuttle dash, closed front touring, torpedo; one closed front, 50 horsepower touring, and one chassis. Features: Double gear on steering gear for removing back lash; reduction gears in oil; eccentric cam and pump shaft bearing to allow for adjustment; larger valves. Mechanical changes: Improved roller push rods and valve adjustment; new style accelerator and cut-out pedals. Price range, \$1,750-\$2,700.

Jackson Automobile Co., Jackson, Mich.—Five four cylinder, water cooled, shaft driven cars. One each model 38 torpedo, model 35 closed front touring, model 41 closed front touring, model 30 runabout, model 51 closed front touring and one chassis. Features: Convertible torpedo body; unit power plant; single casting "L" head motor; full-elliptic springs; thermo-syphon cooling; low-tension magneto. Price range, \$1,000-\$2,250.

Kissel Motor Car Co., Hartford, Wis.—Three Kissel water cooled, shaft driven cars. One four cylinder, 40 horsepower touring car; one 30 horsepower touring car; one six cylinder, 60 horsepower, closed front touring car and one chassis. Features: Large external and internal expanding brakes on rear wheels; double drop frame; on models D11, WS and F11,

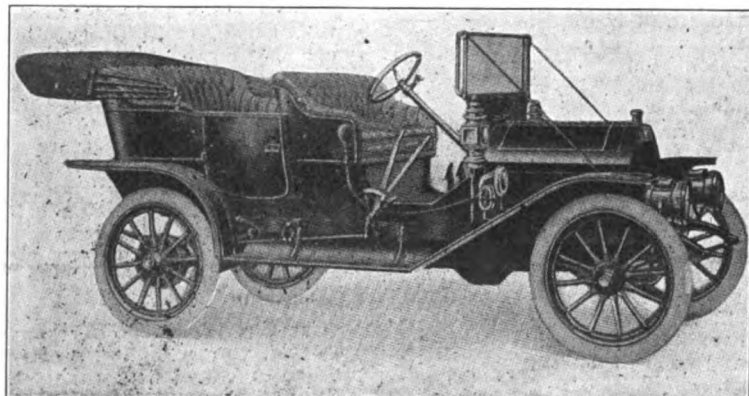
four-speed selective transmission with direct drive on third speed. Mechanical changes: Steering tie-rod placed behind front axle; foot accelerator added; wheel sizes changed from 34 x 3½ to 36 x 4 on above models; oil pump in crankcase. Price range, \$1,500-\$2,600.

Knox Automobile Co., Springfield, Mass.—Five Knox water cooled, shaft driven cars. One each four cylinder, 40 horsepower torpedo; enclosed limousine; closed front touring; one each six cylinder, 60 horsepower, closed front touring and torpedo. Features: Unit power plant; cylinders separate; valves in detachable head; three-plate clutch; straight-line drive. Mechanical changes: Seven Hess-Bright bearing in transmission instead of five. Price range, \$3,150-\$6,000.

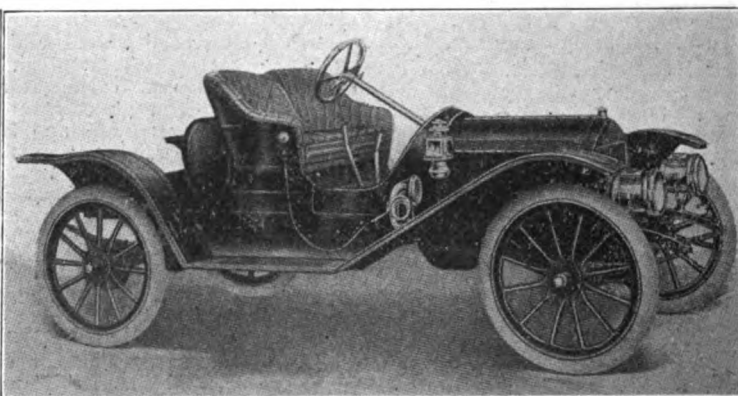
Locomobile Co. of America, Bridgeport, Conn.—Four Locomobile water cooled, shaft driven cars. One each four cylinder, 30 horsepower torpedo, limousine, and closed front touring car; one six cylinder, closed front touring car and one chassis. Features: Bronze engine base and transmission case; no brazing in rear axle; drive and braking stress through distance rods. Mechanical changes: High-tension dual ignition; disk clutch and shaft drive in six cylinder models; new oil system with pump and new carburettor. Price range, \$3,500-\$6,150.

Lozier Motor Co., Plattsburg, N. Y.—Three Lozier water cooled, shaft driven cars. One each six cylinder, 51 horsepower, closed front touring and torpedo; one four cylinder, 46 horsepower limousine and one chassis. Features: Long-stroke motor; ball bearing crankshaft; clutch brake; special rear axle; four-speed transmission with locking device on gear shift lever. Mechanical changes: Engine stroke increased; new radius rods. Price range, \$4,600-\$7,000.

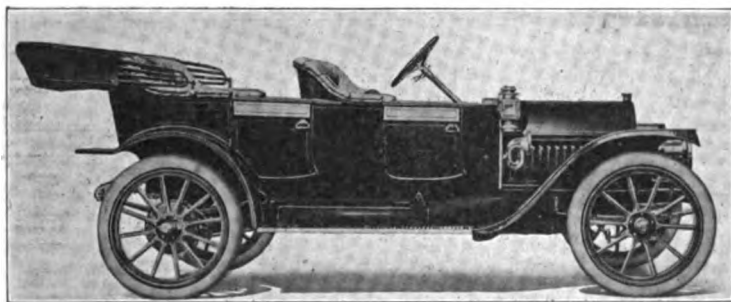
Marquette Motor Co., Marquette, Mich.—Four Ranier four cylinder, 50 horsepower, water cooled, shaft driven cars. Three closed front touring cars, one toy tonneau



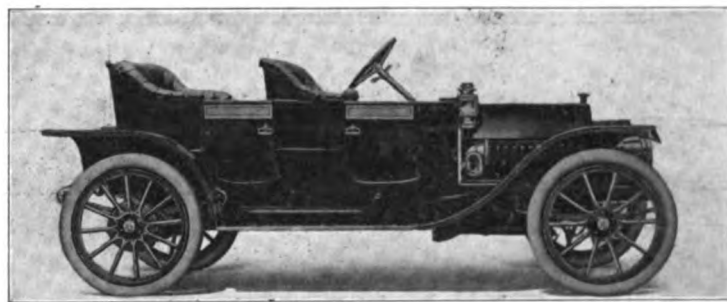
E-M-F OPEN TOURING CAR



FLANDERS 20 HORSEPOWER ROADSTEP



EVERITT "30" FRONT DOOR TOURING CAR



EVERITT "30" CLOSE-COUPLED TOURING CAR

touring car and one chassis. Features: Simplified make and break; platform springs in rear; overstep fourth speed; clutch in unit with transmission. Mechanical changes: Aluminum running boards; new style fenders; brake equalizers; extension service brake. Price, \$4,250.

Matheson Automobile Co., Wilkes-Barre, Pa.—Four Matheson water cooled, shaft driven cars. Two six cylinder, 50 horsepower touring cars; one six cylinder, 50 horsepower limousine; one four cylinder, 40 horsepower, closed front touring car and one chassis. Features: Overhead valves; valves readily removable; ball joints on push rods; heavy frame, trussed and braced; transmission and differential in unit housing on rear axle. Mechanical changes: Universal joint between pump and timing gears; heavier fan belt; leverage of clutch and foot brake increased. Price range, \$3,500-\$5,000.

Maxwell-Briscoe Motor Co., Tarrytown, N. Y.—Five Maxwell water cooled, shaft driven cars. One two cylinder, 16 horsepower runabout; two closed front touring, and one closed front runabout; four cylinder, 30 horsepower cars; one four cylinder, 25 horsepower, closed front, toy tonneau touring car and one chassis. Features: Unit power plant; three-point suspension; thermo-syphon cooling; multiple disk clutch; flywheel in front. Price range, \$600-\$1,350.

Mercer Auto Co., Trenton, N. J.—Four Mercer four cylinder, 30 horsepower, water cooled, shaft driven cars. One each limousine runabout, toy tonneau touring and chassis. Features: "T" head motor; Bosch dual ignition. Mechanical changes: New motor of own manufacture; full floating, open-ended rear axle. Price range, \$2,150-\$3,500.

Metzger Motor Car Co., Detroit, Mich.—Four Everitt 30 horsepower, four cylinder, water cooled, shaft driven cars. One each closed front runabout, closed front touring, and toy tonneau, closed front touring. Features: Composite motor con-

struction; cylinders cast en bloc; vacuum oiled system; double drop frame. Mechanical changes: Monobloc casting including magneto and pump support; cellular radiator; Bosch ignition. Price range, \$1,350-\$1,500.

Midland Motor Co., Moline, Ill.—One Midland four cylinder, 40 horsepower, water cooled, shaft driven, closed front touring car and one chassis. Features: Three-point suspension; lock on gear shift to prevent theft. Mechanical changes: Splitdorf magneto; Rayfield carburetter. Price range, \$1,950-\$2,250.

Mitchell-Lewis Motor Co., Racine, Wis.—Four Mitchell water cooled, shaft driven cars. One each four cylinder, 30 horsepower runabout; closed front touring car and limousine; one six cylinder, 50 horsepower, closed front touring car and one chassis. Features: Valves in the head; self-contained oiler in crankcase. Price range, \$1,200-\$2,250.

National Motor Vehicle Co., Indianapolis, Ind.—Four four cylinder, 40 horsepower, water cooled, shaft driven cars. One each closed front runabout, closed front touring, touring and limousine. Mechanical changes: Larger valves and placed opposite; all tonneaux increased in width and length. Price range, \$2,500-\$4,000.

Moline Automobile Co., East Moline, Ill.—Three Moline four cylinder, 30 horsepower, water cooled, shaft driven cars. One each closed front touring, small tonneau touring and touring. Features: Long stroke motor; large brakes; roomy bodies. Mechanical changes: Larger motor; wheel diameters increased to 36 inches; dropped frame; double independent ignition system; larger brakes; longer wheelbase. Price range, \$1,600-\$1,875.

Moon Motor Car Co., St. Louis, Mo.—Three Moon four cylinder, water-cooled, shaft driven cars. One each 30 horsepower coupe and torpedo, one 45 horsepower torpedo and one chassis. Features: Honeycomb radiators; four-speed selec-

tive transmission; full floating rear axle. Mechanical changes: Longer wheelbase; multiple disk clutch on 30 horsepower models. Price range, \$1,500-\$3,000.

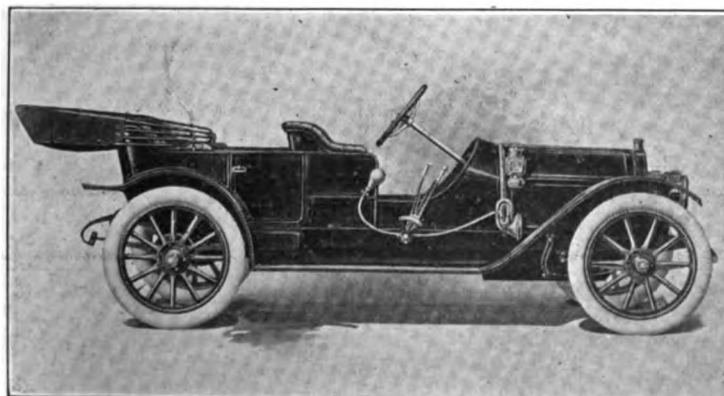
Nordyke & Marmon, Co., Indianapolis, Ind.—Four Marmon four cylinder, 32 horsepower, water cooled, shaft driven cars. One each closed front runabout, closed front touring, limousine and closed front toy tonneau touring car. Features: Three-point suspension; oiling system. Mechanical changes: Wheelbase lengthened from 116 to 120 inches. Price range, \$2,750-\$4,000.

Oakland, Motor Car Co., Pontiac, Mich.—Four Oakland four cylinder, water cooled, shaft driven cars. One 30 horsepower runabout and two touring cars; one 40 horsepower, closed front touring car and one chassis. Features: "L" head motor; multiple disk clutch; irreversible steering gear. Mechanical changes: Larger radiator; larger pump; heavier cylinder heads; fan; cork inserts in clutch. Price range, \$1,000-\$1,600.

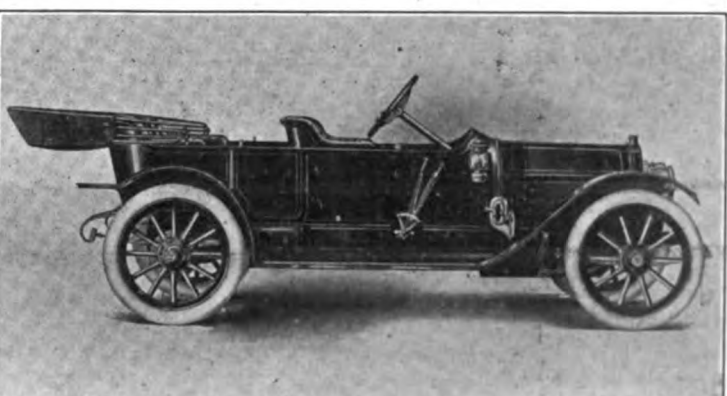
Ohio Motor Car Co., Cincinnati, Ohio—Three Ohio four cylinder, 35-40 horsepower, water cooled, shaft driven cars. One each runabout, torpedo and closed front touring and one chassis. Mechanical changes: New front and rear axles; torque bar used in place of torque tube; inside control for torpedo models; bore of motor increased from 4¼ inches to 4½ inches.

Olds Motor Works, Lansing, Mich.—Five Oldsmobile water cooled, shaft driven cars. One each four cylinder, 40 horsepower, closed front touring, closed front touring (Special), closed front tourabout and roadster; one six cylinder, 60 horsepower, closed front touring car. Features: Four speed selective transmission; direct on high; Bosch dual ignition. Mechanical changes: "T" head motor added; straight-line drive; noiseless spiral timing gears. Price range, \$3,000-\$5,000.

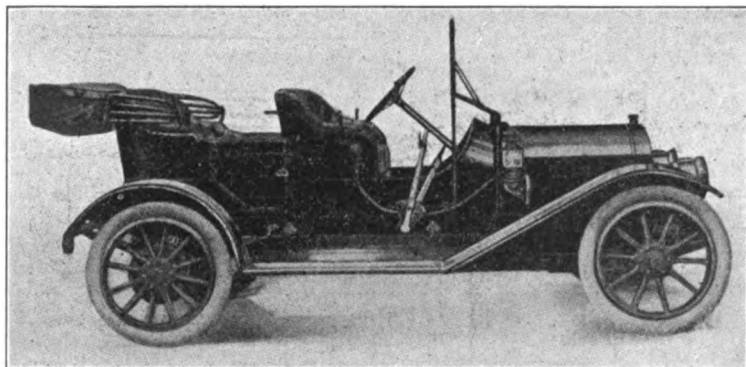
Packard Motor Car Co., Detroit, Mich.—Four Packard four cylinder, water cooled, shaft driven cars. One each 30 horse-



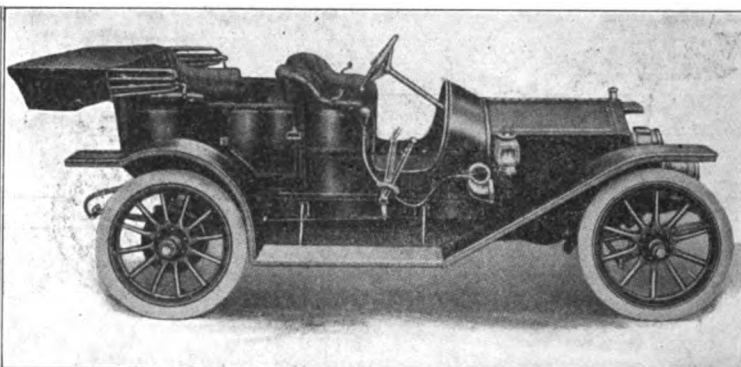
HUDSON "33" SMALL TONNEAU



HUDSON "33" TORPEDO TOURING CAR



CASE CLOSE-COUPLED TOURING CAR



PULLMAN CLOSE-COUPLED TOURING CAR

power, closed front touring, coupe and enclosed limousine; one 18 horsepower, closed front touring car. Features: Dry-plate clutch; hydraulic governor; differential and bevel gears in unit housing on rear axle. Price range, \$3,200-\$5,750.

Palmer & Singer Mfg. Co., New York City. Three P & S water cooled, shaft driven cars. One each six cylinder, 60 horsepower touring; six cylinder, 40 horsepower limousine; four cylinder, 40 horsepower touring and one chassis. Features: Multiple jet carburettors; universal joint connection on steering gear; radiator on trunnions. Mechanical changes: New rear axle flywheel clutch in four cylinder, 40 horsepower, and six cylinder, 60 horsepower models; longer wheelbase; larger bodies; direct drive on high speed in two afore-mentioned models; heavier flywheels. Price range, \$2,500-\$4,000.

Peerless Motor Car Co., Cleveland, Ohio.—Four Peerless water cooled, shaft driven cars. One each four cylinder, 30 horsepower limousine and touring cars; one four cylinder, 20 horsepower landaulet; one six cylinder, 50 horsepower torpedo and one chassis. Features: One-piece aluminum crankcase; double ignition; with Yale lock; internal expanding clutch; four-speed selective transmission. Mechanical changes: Larger bore; plain bearing instead of ball bearings in front of crankshaft; splash feed oiling system. Price range, \$4,200-\$6,000.

Pierce-Arrow Motor Car Co., Buffalo, N. Y.—Four Pierce-Arrow six cylinder, water cooled, shaft driven cars. One 66 horsepower touring landaulet, one 48 horsepower torpedo, one 36 horsepower limousine, one 48 horsepower, closed front touring car and one chassis. Features: Gravity oil feed direct to bearing on crankshaft; bronze faced clutch; live rear axle; cast aluminum body; motor on main frame. Mechanical changes: Larger

bodies on all models; cam shaft gears made with intermediate pinions; secondary wires in metal case; internal gear and tooth coupling instead of claw coupling for direct connection of high gear; increase in size of brakes; accelerator pedal. Price range, \$4,000-\$7,200.

Pierce Motor Co., Racine, Wis.—Four Case four cylinder, 30 horsepower, water cooled, shaft driven cars. One each torpedo, touring, closed front touring, touring limousine and one chassis. Features: Remy dual ignition. Mechanical changes: Larger timing gears; drop forged cam shaft and cams; die cast white bronze bearings; centrifugal water and oil pumps; magneto on left side; oil gauge. Price range, \$1,750-\$2,800.

Pope Mfg. Co., Hartford, Conn.—Four Pope-Hartford water cooled, shaft driven cars. One each four cylinder, 50 horsepower runabout; closed front touring and limousine; one six cylinder, 50 horsepower, closed front touring car and one chassis. Mechanical changes: Wheelbase increased to 120 inches; channel frame; four-speed selective transmission; Bosch dual ignition; larger tires; longer springs. Price range, \$3,000-\$4,150.

Pullman Motor Car Co., York, Pa.—Four Pullman four cylinder, water cooled, shaft driven cars. One each 30 horsepower, closed front touring car and runabout; one 35-40 horsepower, closed front touring car, and one 50-60 horsepower, closed front touring car. Features: "T" head motor; Bosch high-tension magneto; Stromberg carburetter; splash oiling system; semi-elliptic springs all around. Mechanical changes: Longer wheelbase. Price range, \$1,650-\$4,000.

Regal Motor Car Co., Detroit, Mich.—Three four cylinder, water cooled, shaft driven cars. One each 20 horsepower, underslung, closed front runabout; 40 horsepower, closed front touring car; 30

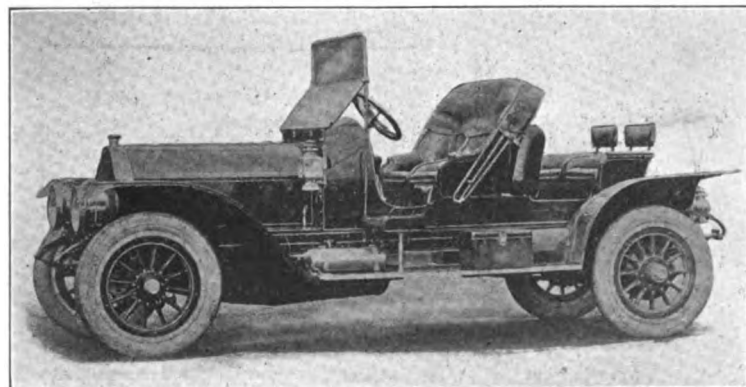
horsepower, closed front touring car and one chassis. Features: Underslung 20 horsepower model; constant level splash oiling system. Mechanical changes: I-beam front axle; 34 x 4 tires; larger brakes; new rear axle and housing; 110-inch wheelbase; new gear shift. Price range, \$900-\$1,650.

Reo Motor Car Co., Lansing, Mich.—Four four cylinder, 30 horsepower, water cooled, shaft driven cars. One each closed front runabout, touring limousine and closed front touring and one chassis. Features: Left hand steering; positive cooling; main bearings adjusted from outside of crankcase. Mechanical changes: Greater accessibility of clutch; new lubricating system. Price range, \$1,050-\$2,000.

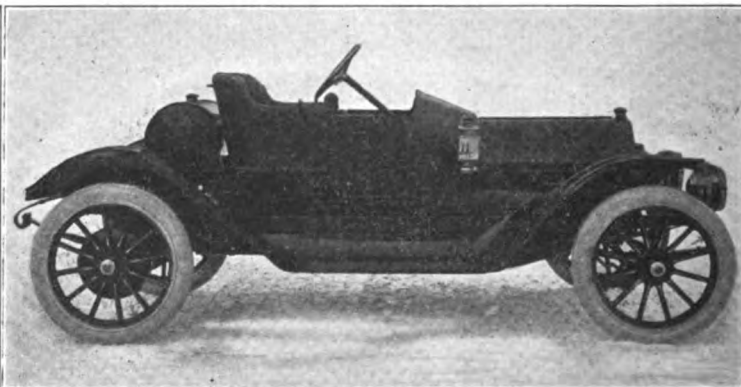
Reo Motor Car Co., Lansing, Mich.—One R-O four cylinder, 40 horsepower, water cooled, shaft driven, closed front touring car. Features: Left hand steering with gear shaft levers on right hand side.

Royal Tourist Car Co., Cleveland, Ohio.—Three Royal Tourist four cylinder, 45 horsepower, water cooled, shaft driven cars. One each touring, limousine and closed front touring and one chassis. Features: Special type carburetter; oil filter. Mechanical changes: Bosch double ignition. Price range, \$4,500-\$5,700.

Selden Motor Vehicle Co., Rochester, N. Y.—Five four cylinder, 48 horsepower, water cooled, shaft driven cars. Three torpedoes and one each touring, closed front touring and one chassis. Features: Gear shift levers inside torpedo bodies; brake connections inside frame to avoid slotting same; two independent ignition systems. Mechanical changes: Increased wheelbase; motor redesigned; drop frame; three-quarter elliptic rear springs; cone clutch; new carburetter; two universal joints; one-piece reach rod. Price range, \$2,250-\$2,600.



KNOX DOUBLE RUMBLE RACEABOUT



REO 30 HORSEPOWER TORPEDO ROADSTER

Simplex Auto Co., New York City—Five Simplex water cooled cars. Three four cylinder, 50 horsepower, chain driven limousines; one each touring car and runabout on same chassis, and two chassis. Features: Same as for 1910 except levers in center of closed front bodies. Price range, \$4,000-\$6,600.

Simplex Motor Car Co., Mishawaka, Ind.—Three Amplex, four cylinder, 30-50 horsepower, water cooled, shaft driven cars. One each limousine, closed front touring and torpedo and one chassis. Features: Two cycle; three-point suspension; fly-wheel clutch; oil feed adjustable from dash; inter-locking device for gear shift lever. Mechanical changes: Air starting device; longer wheelbase; longer and wider springs; larger brakes; method for flooding carburettor from dash; front doors. Price range, \$4,500-\$5,800.

Speedwell Motor Car Co., Dayton, Ohio—Three Speedwell four cylinder, 50 horsepower, water cooled, shaft driven cars. Two closed front touring cars, one torpedo and one chassis. Features: Straight-line drive; levers in center on closed front cars; large braking area. Mechanical changes: Body lowered two inches by flattening springs; demountable rims; gear pocket on motor for dynamo. Price range, \$2,500-\$2,900.

Stearns Co., F. B., Cleveland, Ohio—Five Stearns four cylinder, water cooled cars. One each 15-30 horsepower coupe toy tonneau touring, closed front touring, and Victoria; one 30-60 horsepower, closed

front touring car and one chassis. Features: Multiple jet carburetters; dry multiple disk clutch. Mechanical changes: Sight feed oiler. Price range, \$3,200-\$5,800.

Stevens-Duryea Co., Chicopee Falls, Mass.—Three Stevens-Duryea six cylinder, 35 horsepower, water cooled, shaft driven cars. One each limousine, closed front touring, torpedo and chassis. Features: Three-point suspension; unit power plant; all connections in drive line square or taper square. Mechanical changes: Water jacket on carburettor; belt driven fan. Price range, \$3,500-\$5,000.

Thomas Motor Co., E. R., Buffalo, N. Y.—Five Thomas water cooled, shaft driven cars. One each six cylinder 40 horsepower torpedo and limousine; two closed front touring cars, and one four cylinder, 28 horsepower limousine. Features: Forged flywheel; safety loop to hold up shaft and torque bars in case of breakage. Mechanical changes: Four-point instead of three-point suspension; drip pan under carburettor. Price range, \$4,015-\$5,050.

Willys-Overland Co., Toledo, Ohio—Four Overland four cylinder, water cooled, shaft driven cars. One each 20 horsepower, closed front touring car and runabout; one 25 horsepower, closed front touring car, and one 40 horsepower torpedo. Features: Control in center on closed front bodies; three-point suspension; straight-line drive; five bearing offset crankshaft; cylinders cast separately.

Mechanical changes: Longer wheelbase; closed front and torpedo bodies; auxiliary tank on radiator; larger springs. Price range, \$775-\$1,675.

Willys-Overland Co., Toledo, Ohio—One Marion four cylinder, 40 horsepower, water cooled, shaft driven, closed front touring car. Features: Force feed oilers; multiple disk clutch; three-speed selective transmission. Mechanical changes: Bosch dual ignition; levers in center on closed front cars. Price range, \$1,000-\$1,700.

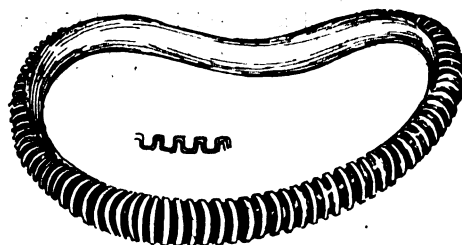
White Co., Cleveland, Ohio—Three White cars. One four cylinder, 40 horsepower, water cooled, shaft driven torpedo; one four cylinder, 40 horsepower, closed front touring car, and one 40 horsepower, steam touring car. Features: Of gasoline cars, three-point suspension; en bloc motor; long stroke; compression release; left hand steering on 40 horsepower models. Mechanical changes: Longer wheelbase on 40 horsepower models. Price range, \$2,000-\$3,200 on gasoline cars; \$2,000-\$4,000 on steam cars.

Winton Motor Carriage Co., Cleveland, Ohio—Four Winton six cylinders, 48 horsepower, water cooled, shaft driven cars. Two torpedos, one closed front touring car, one enclosed limousine and one chassis. Features: Self-starting device. Mechanical changes: Frame raised over rear axle; lower suspension drop forged front axle; new carburettor; larger brakes; detachable pan. Price range, \$3,000-\$4,500.

TIRES AND RIMS

In the department of pneumatic tires there is little that is new. The chief principles necessarily are alike and are unchanging, and shapes and sizes have become almost thoroughly standardized. Tires now differ mainly in respect to quality, that is, in respect to the materials and methods used in their manufacture. The amount of rubber and of fabric employed, and the thickness of treads and side walls are the principle points of difference observable by the semi-critical eye. The most apparent distinguishment of brands, one from the other, is in the matter of non-skid treads. Each particular brand has a tread pattern of its own, and these treads differ radically. They are as diametrically opposed, for instance, as the prominently protruding and irregularly arranged knobs of the Morgan & Wright anti-skid and the cup-like depressions in the Pennsylvania vacuum tread, or the multitude of rubber surfaces of the Ajax to the steel studs of the Michelin. While these treads are characteristic of the tires mentioned, they are but four of the very many. The Diamond tread has a steel studded diamond-shaped grip, and the Firestone continues their design with the name Firestone raised from the tread and repeated diagonally around the entire contact surface. The Goodyear No-Rim-Cut with a

surface of diamond-shaped blocks, the sharp edges of which grip the ground, and the base of each block larger than the top to prevent the pulling off of the blocks, and a host of others among which may be noted the Goodrich steel studs, the Empire Tire



THE MARSH TRUSSED INNER TUBE

Co.'s raised checker tread and the new Traxion tread of the Continental Caoutchouc Co., an all-rubber non-skid with four rows of longitudinal projections, the alternate rows being opposite each other, high in the center and tapering at either end to a line even with the surface of the tire. Other non-skid designs mark the productions of the Fisk Rubber Co. by the Rutherford Rubber Co., the B. F. Goodrich Co., Batavia Rubber Co., the J. Ellwood Lee Co., with the Jelco line, the Stein D. C. Tire Co., the Star Rubber Co., the Miller Rubber Co.,

the Automobile Tire Co., the Prince Tire Co., the Thermoid Rubber Co., and others. And all these are without regard to the attachable non-skid treads of which the Woodward, made by the Leather Tire Goods Co. of Niagara, is the representative type.

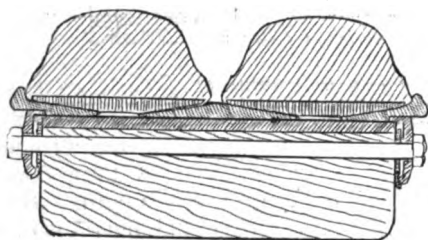
Pertaining to air tires, the only real novelty is the Marsh "trussed inner tube," a brand-new Detroit production, which is included in Charles E. Miller's varied exhibit. The tube resembles a gigantic curled caterpillar, the "trusses" being akin to accordion pleatings which, under the influence of inflation, are pressed tightly together, and thus present much greater resistance to punctures. The tube, however, is not claimed to be puncture-proof, but is claimed to be non-leakable in the event of a puncture, the theory being that if one or more of the "trusses" or "pleats" or folds is punctured, the hole will be immediately closed by edgewise compression.

As a matter of fact, and not unnaturally, the most marked progress has been made in the development of tires for commercial vehicle use. This development has been in the nature of adaptations of demountable rims which have proved of such advantage and convenience to users of pleasure vehicles, and they seem destined to play

an even more vital part in the commercial field in which the item of dollars and cents is of far greater moment. Of these demountable rims three are exhibited at the Garden for the first time—the Firestone, the Hartford and the Continental.

The Firestone device comprises, essentially a clamping flange and a retaining ring, the latter held in place by 14 nuts and bolts; when the nuts are removed the flange and, of course, the retaining ring are released and rim and tire both may be removed and replaced by a spare rim and tire which it is assumed are carried for the purpose, and which are put on by merely reversing the operation. Included in the Firestone exhibit there is also a new side wire block tire, with the tread formed of blocks having a common base, instead of the rubber being a continuous bandage around the wheel. There also is a new dual demountable rim formed by mounting two pneumatic tires side by side on the same felloe band.

The Hartford Rubber Works Co.'s new demountable rim for solid tires, invented by C. B. Whittelsey, superintendent of the

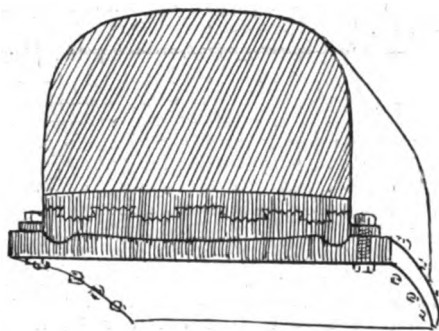


HARTFORD TWIN SOLID DEMOUNTABLE

company, employs the principle of the wedge ring, provision against irregularities in wheel and band diameters being made by splitting it and allowing for clearances to permit of positive seating of wedges and to prevent springing of the rims while in use on heavy trucks. The beveled inner surface of the rim corresponds with the taper of the wedges, which latter are held in place by eight small lugs, secured by bolts passing through holes in the rim. A double wedge ring is placed in the center of the felloe band to form the inner seat for each of the individual rims where twin tires are used. The rim is designed for use with either single or twin tires, and may be applied to any wheel fitted for the standard types of side-flanged or side-wire tires.

At least two other well known companies, the Continental and Morgan & Wright, are known to have demountable solids in hand and it is probable that they will be disclosed during Part II of the show, which occurs next week and to which all these truck tires more properly belong. The Diamond Rubber Co. and the Republic Rubber Co. also have solid tires embodying new features in store. The Continental company, however, already displays a solid tire comprising a rubber tread which is vulcanized to a hard rubber base which in

turn is secured to a steel band that forms the base of the whole and which is de-



CONTINENTAL SOLID DEMOUNTABLE

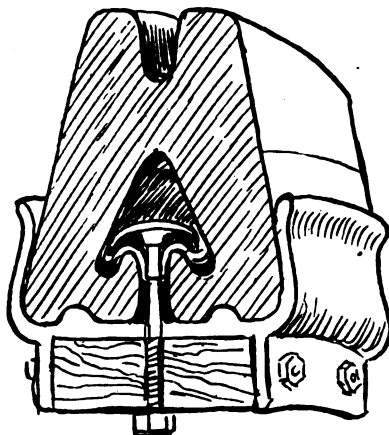
signed for application to demountable rims. In the exhibit of the Consolidated Rubber Tire Co., the Kelly-Springfield sectional truck tire, better known as the Kelly "block



TWO DIAMOND EXHIBITS

tire," and which set the fashion for such heavy duty tires, occupies a conspicuous place, but not to the detriment of the tires, which, contrary to the usual procedure, were developed after solid tires had made the Kelly-Springfield fame secure.

There are as usual several cushion or

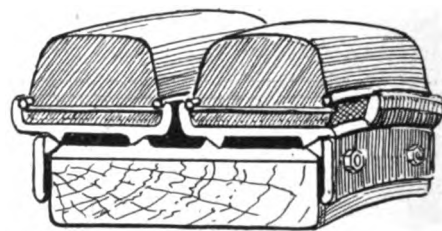


UNITED STATES CUSHION TIRE

semi-solid tires, the best known of which are the Swinehart and the Motz, in each

of which the design of the central core is the essential feature. The newest development of this class is the United States tire, marketed by the United States Wheel Co., of New York. In shape it is a frustum pyramid, the flattened apex of which is indented. The hollowed core also is of pyramid shape and the base of the tire is split to increase the resiliency, which of course is claimed to rival that of pneumatic tires.

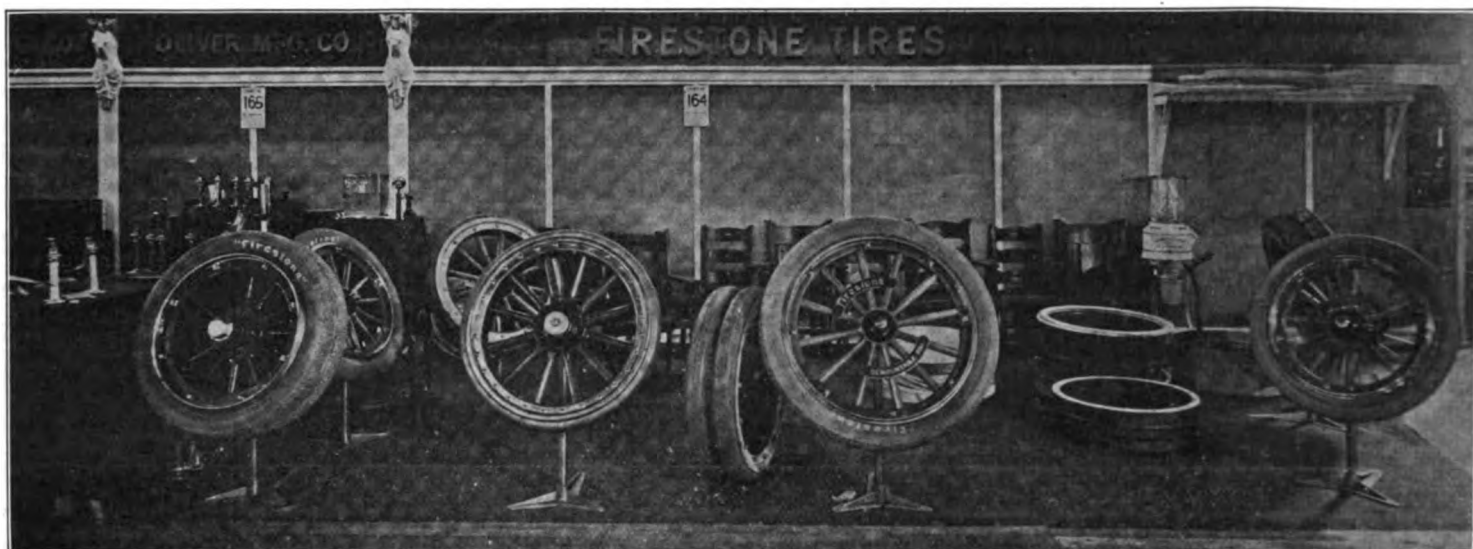
Demountable rims for pneumatic tires are of far greater variety and of more individuality than the tires themselves. From the original bolted-on Fisk tires, which blazed the way for the numerous types of detachable and removal rims, the principle and general construction of which remains unchanged and as good as ever; and the simple Fisk removable rim, which is detached merely by unscrewing five nuts, and which came later, through the United Rim Co.'s standardized products and the newer Continental rim with its circle of little hooks on the removable flange which engage with and are locked fast to corresponding lugs on the base of the rim—through this long line of contemporaneous inventions there



FIRESTONE TWIN DEMOUNTABLE

has come an equally numerous family of newer creations, some of them of weird and wonderful design, and of which several are in evidence at the show. There is the Dorian, minus removable flange or retaining ring, but with the rim proper split into two sections and connected by a toggle joint which "breaks" like a breech loading gun, when it is desired to dismount the tire. There is the Howard, employing a simple expanding mechanism controlled by one bolt; there is the Booth, utilizing the old worm and gear principle; the Denegre, from Birmingham, Ala., employing the tongue and groove idea but having 13 tapered fasteners, controlled, however, by one bolt, and there also is the Lambert, displayed by the American Rim Co., which makes use of wedges, ratchets and pawls. There also is the better known Baker Universal, now marketed by W. K. Prudden & Co., the Lansing (Mich.) wheel manufacturers, in which steel studs on the removable rim fit into corresponding sockets in the steel band on the wheel itself.

On the part of the pneumatic tire manufacturers themselves, about the only development is disclosed by Michelin, and it takes the form of a demountable for dual pneumatics, which are recommended for use on limousines, heavy touring cars and commercial vehicles.



ACCESSORIES

METALS AND PARTS

Among the numerous metals designed for the use of automobile manufacturers, the most unique is the alloy Cupror contained in the exhibit of the Cupror Co., of New York City, which shows samples of that new metal. This alloy, the exact composition of which is kept secret by the company, is claimed to possess a tensile strength of 92,500 pounds per square inch in bar form; it is of the specific gravity 8.11, and a very poor conductor of electricity. Its color is similar to gold, and its surface is said to keep bright and clear without the application of polishing liquids. The makers guarantee it not to corrode. It melts at 2,200 Fahrenheit with Borax as flux, and shrinks to an extraordinary degree when cooling. It can be melted and remelted seemingly without injury to the metal. Cupror in ingots sells for 25 cents per pound; in wire or sheet form proportionately more. The exhibit embraces a very large variety of articles, from heavy plate and rods to a fine wire, one one-thousandth of an inch in diameter.

Another exhibit which is more varied and which is almost picturesque, is the display of the Crucible Steel Co., of Pittsburg, Pa. Besides its standard line of steel forgings and castings, the company shows in individual porcelain saucers a number of raw products, metallic elements and oxides of metals used in the manufacture of modern tool and armor steels.

Imported steels from Austria hold the center of the exhibit of Peter A. Frasse & Co., American representative of the Poldi Steel Co., of Austria. There may be seen

samples of fractures as they occur in different steels, also examples of proper and poor annealing of various alloy steels. Gear castings made by the Quride Co., of Syracuse, and Shelby seamless steel tubing cover the remainder of the space in the foreground, while in the rear of the booth a rugged-looking iron "horse" stands on its sturdy legs, which have been designed with the view of bearing the weight of a car while repairs are being made to axle or wheels.

Of all the metals used in automobile manufacture none is more widely used or better known than Parsons' white brass, bearings made of which form a large part of the exhibit of Cramp & Sons' Ship and Engine Building Co., of Philadelphia, Pa. Manganese bronze castings and extra heavy castings from steel give further evidence of the work accomplished by the big ship-building firm.

Chrome-vanadium steel forgings are displayed by the United Steel Co., of Canton, Ohio, while in the adjoining booth the American Vanadium Co. shows a full line of alloys of steel in the raw and finished state. Another company, the Vanadium Metals Co., shows a line of lamp brackets, foot rests, tire brackets, numerals and castings of similar alloy.

Malleable iron castings and brass goods form the offering of the North & Judd Mfg. Co., of New Britain, Conn., the line including such diverse objects as door handles, hinges, foot rails, buckles and loops. More massive in bulk are the castings exhibited by the Lebanon Steel Casting Co., of Lebanon, Pa., consisting chiefly of shaft castings,

flywheels, brake drums and engine housings.

Although alloys of copper and nickel are not new, the new Monel Metal, introduced by the Philadelphia Steel & Forge Co., of Philadelphia, Pa., commands notice. It consists of 68 per cent. nickel and 32 per cent. copper, can be machined easily, possesses great strength and effectively resists corrosion by ordinary agents. In appearance it is similar to pure nickel, is easily polished and may be forged, soldered, brazed or electrically welded. Natural alloy steels form another part of this exhibit.

An immense one-piece housing for engine and rear axle, which had been cast for the motor-racing boat Dixie II, stands in one corner of the stand of the Light Mfg. & Foundry Co., while almost the entire inner space of the booth is taken up by a motor, of four cylinders, approximately 40 horsepower, invented by Superintendent Grubb, of the Light company. It is a two-cycle engine with cylinders cast separately, each cylinder being easily removable from the base. Castings of all kinds, including gears, gearcases, crankshaft cases, etc., also are shown.

Frames of cold-pressed steel form the exhibit of the A. O. Smith Co., of Milwaukee, Wis., together with a varied assortment of gears and smaller parts of motors, while adjoining the Smith booth the National Tube Co., of Pittsburg, Pa., shows a full line of Shelby seamless tubing. Gears, transmissions and steering gears are exhibited by the Brown-Lipe Gear Co., of Syracuse, N. Y., as well as by the Warner Gear Co., of Muncie, Ind. The latter concern also shows a special heavy transmission

and gearcase for use in commercial vehicles.

An exceedingly varied assortment of electrically welded parts constitutes the offering of the Standard Welding Co., of Cleveland, Ohio. It includes steel tubing, wheel rims for automobiles and motorcycles, forks and other motorcycle parts, twin welded rim for truck use, electrically welded crankshaft and demountable rims.

Fans are the specialty of the Sparks-Withington Co., of Jackson, Mich., the assertion being made that 75 per cent. of all radiator fans used in America this year will be made by the Sparks-Withington Co. Besides the assortment of fans, there are on view hubs, ball bearings and brake drums

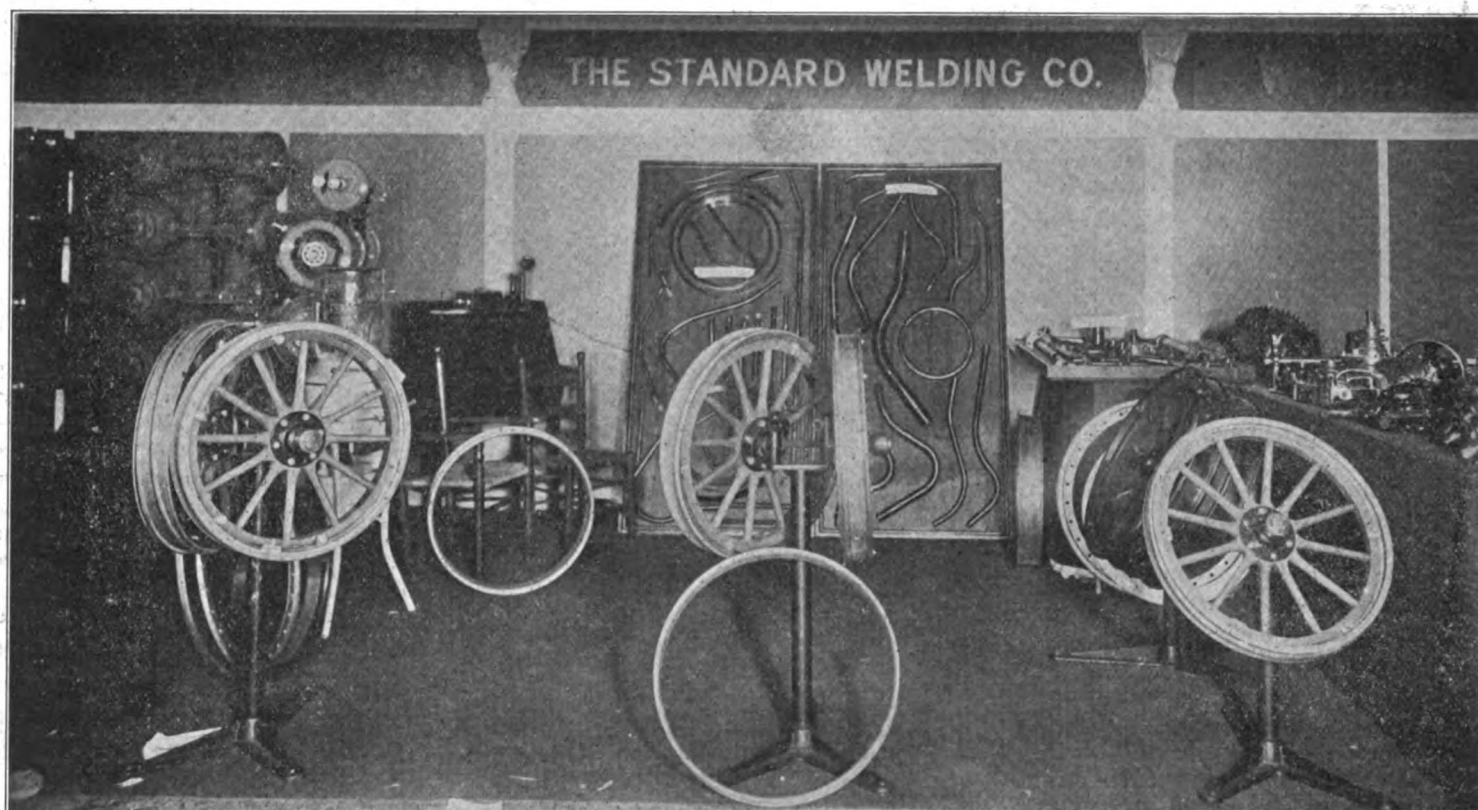
into the mold, a vacuum is created in the latter so that no air bubbles can get into the metal.

The Doehler Die Casting Co., of Brooklyn, N. Y., also shows a line of die castings, most of which are made to order and specifications, with the exception of a centrifugal water pump and a force-feed oil pump, which are stock productions.

Highly tempered steel in the form of drills and other tools is the offering of the Carpenter Steel Co., of Reading, Pa. The feature of the exhibit is a giant drill, six feet high, manufactured for the Westinghouse Electric & Mfg. Co., Ampere, N. J., at the bottom of which lies a 60-foot shav-

ing end of the spanner is slightly shortened and curved, while a small notch is cut into the inner face of this short end. The spanner can be slipped around a bolt or nut in the "wrong" direction without catching, but it will hold perfectly fast when turned in the right direction. Wrenches and tools of standard shapes are shown by the Wright Wrench and Forging Co., of Canton, Ohio, and the Motor Parts Co., of Plainfield, N. J.

In the field of axle manufacture there is a newcomer from North Detroit, Mich., the Russel Motor Axle Co., a concern which was only organized during the past year. The axle, complete with transmis-



SHOWING THE VARIED AND USEFUL PRODUCTS OF THE STANDARD WELDING CO.

in all standard shapes and sizes. Gears both selective and planetary, and gear castings are the offering of the Frost Gear & Machine Co., of Jackson, Mich.

Axles, cranks and crankshafts, made by the Western Tool & Forge Co., of Brackenridge, Pa., form an interesting display in the Concert Hall.

One of the largest assortments of castings of gears and gearcases is that of the Driggs-Seabury Ordnance Corporation, Sharon, Pa. Axles and transmissions, differentials, brakes, brake drums, crankshafts, forgings and steel frames in profusion almost completely fill the booth.

Die castings of more than ordinary quality are featured by E. B. Van Wagner Mfg. Co., Syracuse, N. Y. They are made by a perfected pneumatic casting process by which bubbles in the metal are avoided. Immediately before pouring the molten metal

ing made by this drill. Transmission gears of chrome nickel steel, as made for the Cadillac company, are also shown.

Cast steel in every conceivable shape is shown by Isaac G. Johnson & Co., Spuyten Duyvil, N. Y., while the Muncie Gear Works, of Muncie, Ind., exhibit a number of axles, transmissions and differentials, as well as a foreshortened frame of a car, showing the various parts made by the company.

Drop forgings are offered by the G. Rerl-hon Forge Works, and four complete steering posts with gears and wheel levers serve to show the productions of the Gennier Mfg. Co., of Detroit, Mich., to good advantage.

There is little that is new in the field of handy tools. Undoubtedly the most unique little instrument offered is the "ratchetless ratchet wrench," made by J. H. Williams & Co., Brooklyn, N. Y. One side of the grip-

sion, differential, driving shaft, hubs and brakes, is a neat looking piece of workmanship.

A new feature in the construction of the heavy drop forged axles shown by the Timken-Detroit Axle Co., of Detroit, Mich., is the method of locking the steering knuckle and knuckle pin together by means of a taper pin; spring pads are made of drop forgings thicker in the rear than in the front, so that when the front axle is bolted to the springs, it will stand at a forward angle, giving a castoring effect. Three types of pleasure car axles are shown fitted with the new tapered Timken roller bearings, as is also a full line of front and rear axles for commercial trucks. Jack shafts, hubs and a chassis which is fitted with complete jack shaft, rear axle, brakes and sprockets all of new design and shown for the first time complete the exhibit.

Front and rear axles form the offerings of the McCue Co., of Hartford, Conn. Two full-floating rear axles are shown with hub clutch forged integral, with imported annular bearings, in a one-piece, sheet-steel housing specially heat treated, and furnished with four brake drums. The pinion is integral with the pinion shaft, made of high-class alloy steel. A Lemoine type front axle made of carbon steel also is displayed.

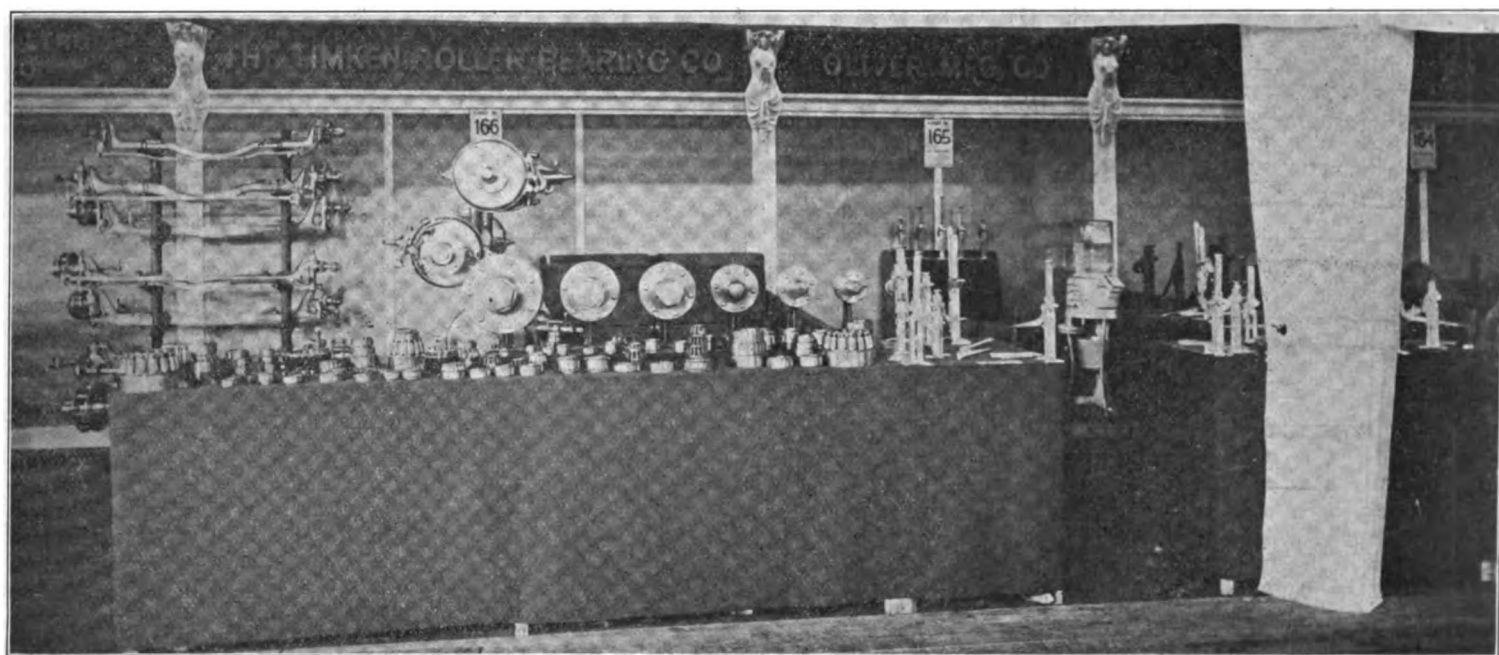
The Sheldon Axle Co., of Wilkes-Barre, Pa., stages an assortment which includes front and rear axles for trucks of from 750 pounds to 10 tons, pleasure car axles and jackshafts with and without transmissions and a variety of springs suitable for all types of vehicles.

Well known because of its firearms, the Lefevre Arms Co., of Syracuse, N. Y., has

With the exception of one new style of radiator, which is shown at the stand of the Harrison Radiator Co., of Lockport, N. Y., there is little departure from accepted standards. The new product is a radiator of a novel design in which the cooling surface of a tubular radiator has been so much increased that the efficiency has been brought up to the standard reached by the honeycomb type. The tubular elements are made of corrugated sheet copper formed in such a way that each element, though containing but one seam, comprises six or seven separate tubular passageways, which, combined with these elements, offers a sinuous passageway for the air, insuring the maximum radiation of heat. Braces also are perforated and assist in the radiation. Some change also is apparent in the radiator manufac-

used. The Timken Roller Bearing Co., of Canton, Ohio, shows a new roller bearing styled by the company the "short" series, and differing from the old style in that it has but one nib, namely, at the inner rim of bearing. This construction is designed to resist even the greatest pressure that can be brought upon it, and already has been installed on some of the heaviest cars built. The standard line of Timken bearings does not indicate any departure from the style long adopted by these makers, with the exception that all bearings henceforth will be made of a new composition of nickel and carbon steel, and that the "short" series will be used on pleasure cars exclusively. A special feature of the exhibit is a glass demonstrating hub showing the motions of the bearing in actual use.

Whitney, Diamond, Baldwin and Link-



TIMKEN ROLLER BEARING AND AXLE PRODUCTS SHOWN IN COMPANION DISPLAYS

this year entered the automobile parts trade with a planetary transmission, differential and jackshaft for trucks. Differential gears are of the spur type, and special attention has been given the brake drums which are so designed that a slight pressure only is required to insure almost instant gripping on the low speed and reverse drums. Differing from the majority of other models these drums are mounted close to the rear axle, and are enclosed in a housing which is securely bolted to the differential housing. The unit as a whole is applicable to commercial vehicles up to and including 30 horsepower.

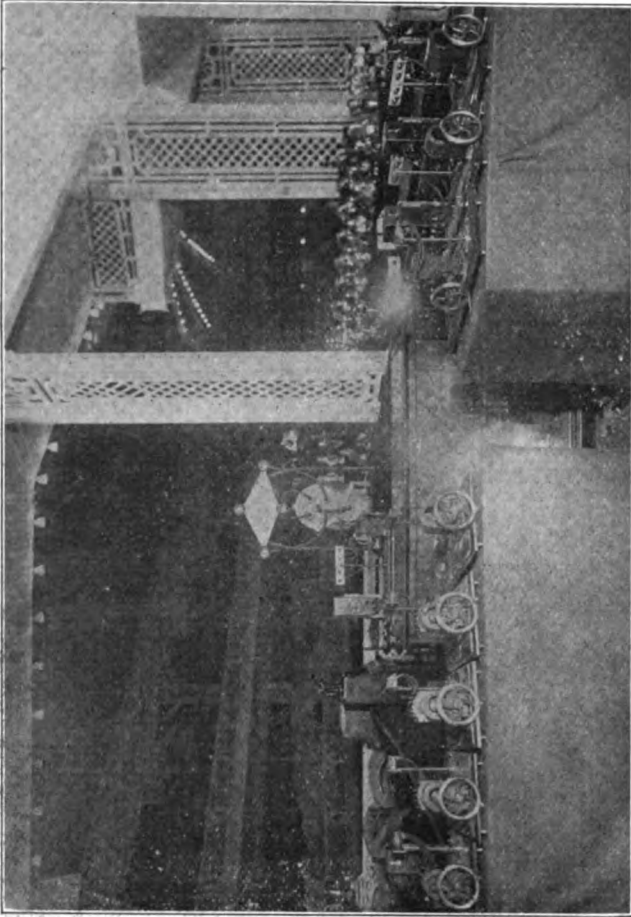
Besides these concerns which make a specialty of axle manufacture, there are a number of other manufacturers who show them in connection with steel castings or forgings, as the Western Tool & Forge Co., of Brackenridge, Pa.; the Driggs-Seabury Ordnance Corporation, and the Merchant and Evans Co., of Philadelphia, Pa.

tured by the Briscoe Co., of Newark and Detroit, but it is chiefly of a minor nature. Provision is made for the circulation of a greater quantity of water without increasing the size of the radiator. Instead of having vertical, narrow slits, as in former styles, the improved Briscoe model adds horizontal branches, thus increasing the circulation. Standard styles of radiators also are, of course, shown by those expert specialists, the McCord Mfg. Co., of Detroit, Mich., the Fedders Mfg. Works, of Buffalo, N. Y., and by the Livingston Radiator & Mfg. Co., the El Arco Radiator Co. and the A-Z Co., all of New York City.

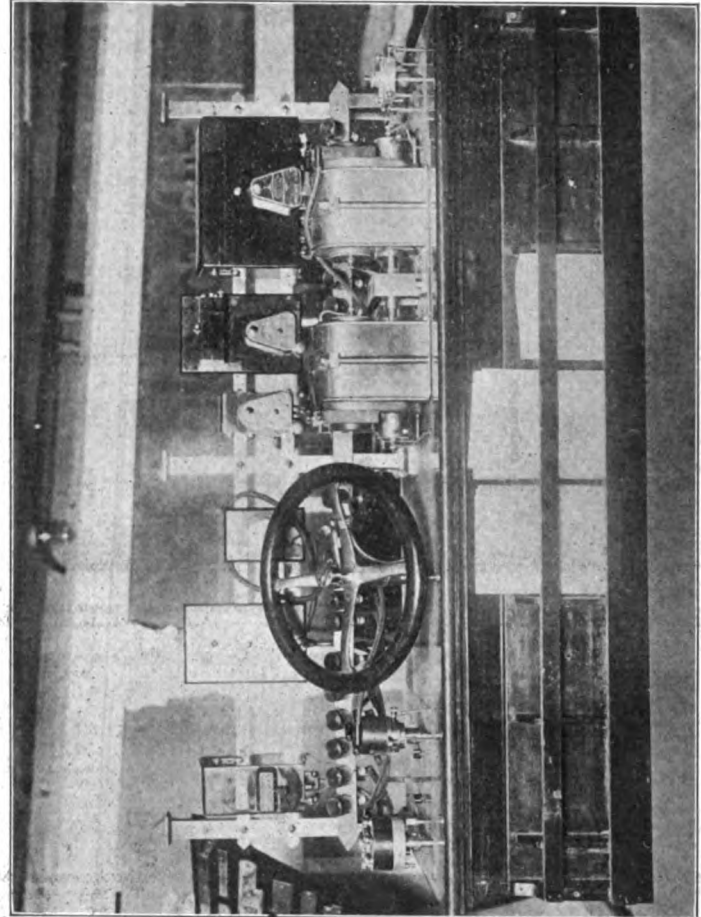
Universal joints in motion are exhibited by the Spicer Mfg. Co., of Plainfield, N. J., as well as a number of drop forgings in rough and finished state. The "drawing card" of the display, however, consists in a steel shaving 12 feet long taken from the inside of a steel sleeve and indicating the tensile strength and toughness of the steel

Belt constitute the chains in evidence, and, of course, they incorporate no novelty, having long since passed that stage. The Baldwin exhibit, however, includes not only chains but recoil checks, in which no radical changes are apparent, but also presents for the first time Brown's patent steering gear, which is radically different from all steering gears shown or used at present. In this gear the line contact of other steering gears has been replaced by broad, flat and circular surfaces, so arranged that any force applied to the ball lever will react on these surfaces, thereby being distributed over a larger area, while the arrangement also takes the strain from the teeth of the gear and pinion to which they are subjected in most gears when the car is in motion.

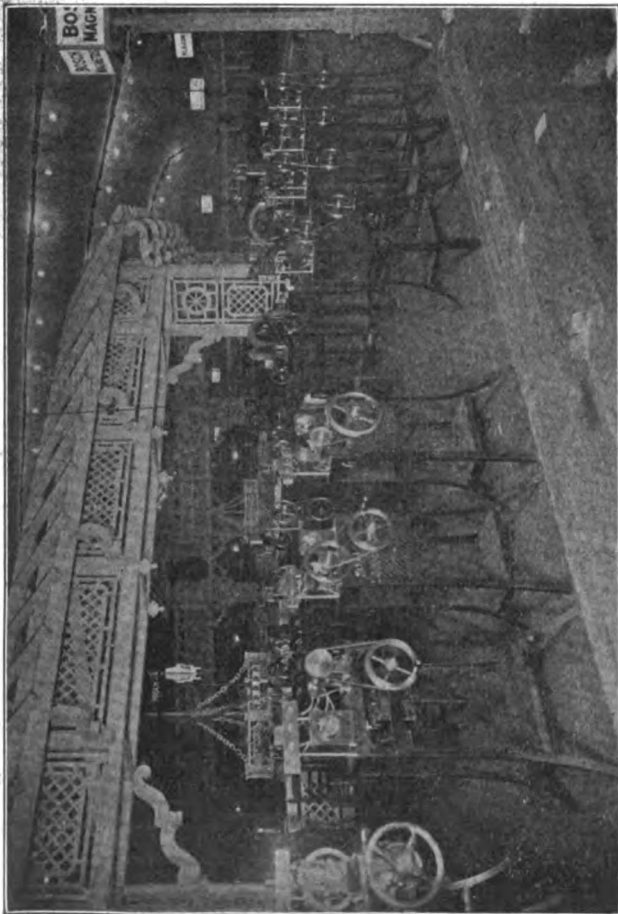
Transmissions and gearshift levers occupy the space of the T. W. Warner Co., of Muncie, Ind. The Merchant & Evans Co., Philadelphia, Pa., also show a number



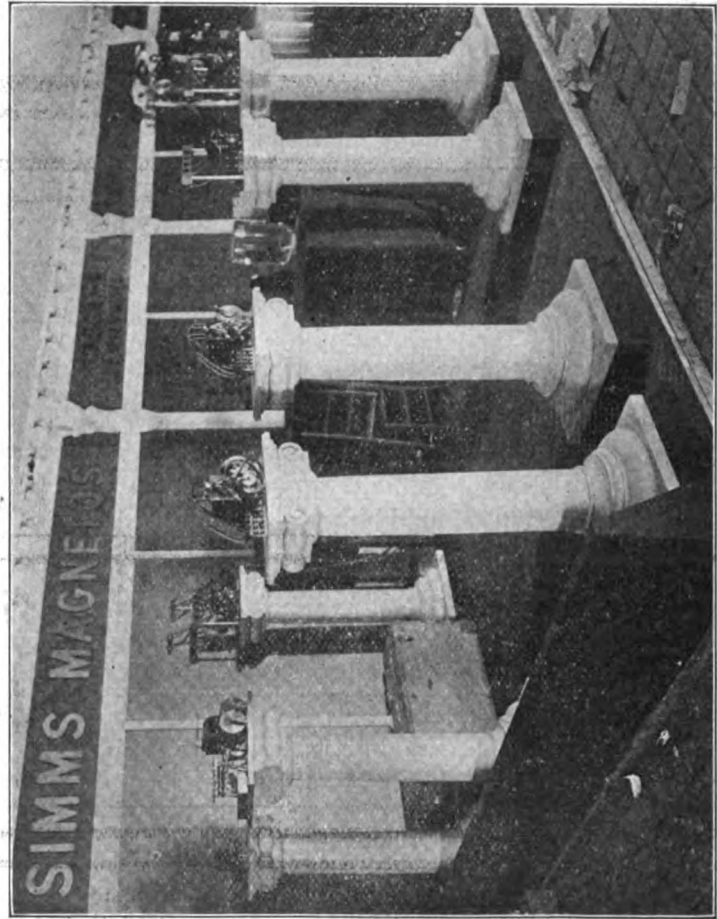
WHERE SPLITDORF SPARKS MAY BE MADE BY HAND



CONNECTICUT PRODUCTS DISPLAYED IN PROFUSION



WHERE THE VISITOR IS PERMITTED TO "CRANK" THE BOSCH MAGNETO



SIMMS MAGNETOS STAGED IN DISTINCTIVE STYLE

of types of transmissions and differentials in conjunction with the Hele-Shaw clutch and a new pressed steel case for the carrying of spare tires. The Hartford Auto Parts Co. exhibits universals and clutches in a variety of types.

Rhineland ball bearings, the separator in which permits the use of within one of a full race of balls, are shown by F. H. Cross & Co., of New York City, and Globe anti-friction roller bearings and Schafer ball bearings are shown by the Globe Anti-Friction Roller Bearing Co., and Barthel, Daley and Miller respectively. R. I. V. ball bearings are noticeable because of the lack of side play between the races. They are shown by the R. I. V. Co., of New York City.

The Hilliard Clutch and Machinery Co., of Elmira, N. Y., have on exhibition an automobile clutch which is built on entirely different principles from those which are found in any clutches now on the market. A spring, the pressure of which is compounded about 10 to 1, actuates a cam which forces the two dry-friction plates together gradually, obviating jerks or slipping. Adjustment is simple and only requires the use of one wrench by means of which the adjusting plate may be moved to that position where the proper friction is obtained. Owing to its small number of parts, the clutch is comparatively small, and is but a fraction of the weight of other multiple disk clutches in which a great number of disks are used.

In the limited field of brakes and brake linings there is little that is novel. The Royal Equipment Co., of Bridgeport, Conn., has added an internal type to its Duplex brake group, which has all the good features of the well-known external type. It is furnished in widths ranging from 1½ inches to 4 inches, of 3-16 inch carbon steel, lined with raybestos. Raybestos, made by the Royal Equipment Co. Thermoid, a product of the Thermoid Rubber Co., of Trenton, N. J., and Motobestos, a new product of the Calmon Asbestos & Rubber Works of America, New York City, are three of the brake linings on view. The W. E. Pruden Hardware Co., of New York, also shows brake lining among a miscellaneous assortment of nuts, bolts, automobile tools and bearing metals.

Steel boxes for tools and batteries, brass door handles, foot rests and robe rails are shown by the Globe Machine & Stamping Co., of Cleveland, Ohio; by the Gilbert Mfg. Co., New Haven, Conn.; the Turner Brass Works, of Sycamore, Ill.; the Hayes Mfg. Co., of Detroit, Mich., all of them showing their standard manufactures which they have been marketing for years.

ENGINES AND ENGINE STARTERS

At the stand of the Warner Mfg. Co., of Toledo, Ohio, the main feature represents an attractive unit power plant, with long-stroke, four-cylinder, four-cycle motor,

cylinders of 3½ bor by 4¾ stroke, giving 19.2 horsepower (A. L. A. M. rating) or 24 on brake. The power plant is complete and includes a Michigan magneto. Alongside of this stands another motor of four cylinders, 3¾ x 4¾, rated at 18.2 (A. L. A. M.) or 24 brake. The remainder of the exhibit comprises jackshafts for commercial cars, transmission gears of the rear axle construction, and a novel center control mounted directly on the transmission lid and intended for sub-frame construction.

Two four-cylinder, four-cycle motors of 35-40 horsepower each are displayed by the



SPLITDORF JUMBO MAGNETO

Excelsior Motor & Mfg. Co., of Chicago, Ill. The cylinders are 4¾ x 5¾, having a considerably longer stroke than has been the case hitherto in Excelsior motors. The oiling system is through hollow crankshaft; copper manifold and mechanically actuated valves are other characteristics. A crankshaft also forms part of the exhibit.

The exhibition of two cycle motors is not confined to those which are shown as the power plants of cars which are on view, there being two engines of this type exhibited by the Tuttle Motor Co., of Canastota, N. Y. One of these is distinctive because of the use of a rotary gas intake valve by means of which the advantages of both the two and three-port systems are realized. The other is of the regular suction type. Cylinders are offset, and base, valve-gear housings and other parts wherever possible are made of aluminum. Some novel and effectual features of control are incorporated in the four-cylinder models and permit of alternate pairs of cylinders being relieved of their working charge and permitted to run idle when full power is not required. Two sizes are offered

for the present—a two-cylinder, 20 horsepower model, and a four-cylinder, 40 horsepower model.

Three four-cylinder motors complete are shown by the Parker Motor Co., of Hartford, Conn. They are of standard design and show evidence of clean designing and careful workmanship.

Included in the engine-starting devices which are shown in a wide variety of styles are the Ever Ready and Sta. starters, which are exhibited by the Auto Improvement Co., and the Star Starter Sales Agency, of New York City, and the Keen starter, which is shown by the Keen Starter Co., also of New York City. Of those starters which cause the initial revolutions of the crankshaft by exploding a mixture of gasoline and air in the cylinder, two systems are shown—one by Geizler Bros., who also include storage batteries in their exhibit, and one by the North East Electric Co., of Rochester, N. Y. Also included in the latter exhibit is an electric car lighting outfit.

The Gardner starter, shown in operation by the Gardner Engine Starter Co., of Chicago, Ill., works on an entirely different principle and embraces a powerful compound spring which is encased in the transmission case and which when released "spins" the engine in the natural way until the regular functions are set up and the motor starts. The spring is automatically rewound immediately the engine starts, and is then ready for use the next time it is required.

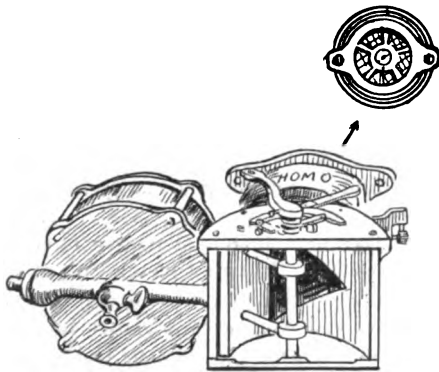
CARBURETTORS

Although it has become widely known in England, the radical and more or less sensational Polyrhoe carburettor is making its first appearance in this country at the present time, being shown by S. Hoffnung & Co., Ltd. The device is constructed upon a special multiple jet plan in which a great number of very fine orifices are used. Indeed, so fine are the openings, or jets, that they cannot be drilled, but are formed by assembling close together a series of thin plates in which are rectangular openings, slotted through to the edge. The battery of tiny jets thus formed are supplied from an ordinary float chamber, the outer surface of the assembled plates forming one wall of an elongated mixing chamber of rectangular section.

Fitting closely within the mixing chamber is a piston valve, the opposite end of which is enclosed in a separate cylinder. Such is the arrangement that as the engine suction increases the piston valve moves away from the throttle valve, thereby progressively uncovering the jet openings in the wall. At the same time air is drawn through a graduated slot in the top of the mixing chamber, the length of the slot being determined by the position of the piston valve. In this way just enough air is being admitted at all times to form a theoretically

correct mixture when mixed with the fuel spray from the jets. The adjustment of the device is effected by altering the width of the air opening, and the arrangement is such that this can be effected on a car while it is in motion by means of a dashboard regulating lever.

The new Homo, which is shown by the Homo Co. of America, has become more than a mere vehicle for the Homo mixing device; it now is a part of a full fledged carburetter employing not only the globe-breaking idea but the somewhat novel principle of applying throttle control to the air, not to the mixture. By the system of



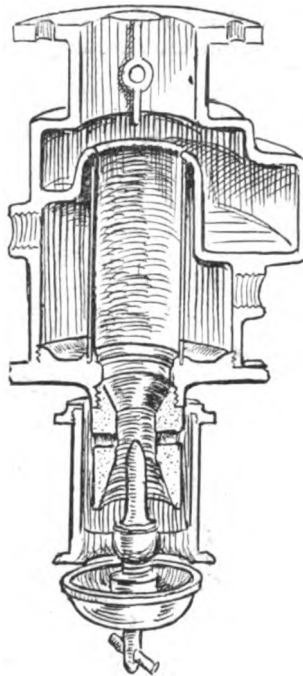
THE HOMO CARBURETTER

throttling adopted, the suction at the jet is rendered constant, therefore, as the jet opening is regulated to correspond with the position of the throttle, the mixture delivered is of constant proportions. But in addition to this satisfactory result, which it is claimed actually is obtained, a Homo mixing fan is introduced in the upper part of the carburetter, just over the jet. Its purpose, of course, being to "slice" the mixture, complete the atomizing effect and thoroughly mingle the air and fuel vapor before it is delivered to the cylinders. The device is unusual in form, the jet being horizontal, while the semi-cylindrical throttle valve is formed with a large V-shaped notch in one edge, which corresponds with an opening in the valve seat. As the valve is opened, the conical needle valve which regulates the jet opening is moved proportionately by means of an external mechanical connection.

A new "Locomotive Type" carburetter which just has been brought out and is shown by L. V. Fletcher & Co., of New York City, is made in either single or double jet types, according to the style of engine to be served. The device is of the concentric float, Venturi tube pattern, and is equipped with a large automatic air valve, controlled by high and low speed springs and formed with 45 degree bevel seats, to ensure quick opening and closing action. In the double jet carburetter, which is a development of the single jet instrument, the secondary jet is placed directly in the

path of the stream of air entering through the auxiliary valve.

Built on the principle of the famous whirling spray, the Vortex vaporizer, made by the Reichenback Laboratories Co., Chicago, Ill., possess several novel features. Air entering at the lower end of a Venturi tube passes upward after being started on a swirling course by two tangential jets through the Venturi walls. As it passes upward, the non-volatilized particles of gas-

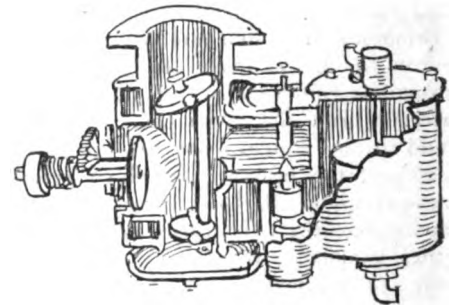


THE VORTEX VAPORIZER

olene brush against walls, heated by a water jacket, and are converted into gas. The auxiliary air enters with a rush through an annular passage in the side and creates a greater whirling effect, thereby producing what is claimed to be a perfect mixture.

Mechanically controlled gasolene admission, combined with mechanically controlled air admission, and a mixture automatically regulated by a compensating air valve, summarizes the features of the new Rayfield carburetter, exhibited by Findeisen & Kropf Mfg. Co., of Chicago, Ill. When the throttle is opened, a small quantity of gasolene is sucked from the float chamber by the creation of a vacuum in the mixing chamber, where it mixes with a large quantity of air admitted through the opening of the mechanical valve in the bottom. If the mixture is too rich, additional air is admitted by the automatic valve in the side of the mixing chamber. The throttle, which is of the damper pattern, is connected by means of a link with a similar damper at the base of the mixing chamber, this arrangement serving to control both the flow of gas and the suction which acts on the jet.

In the Stewart precision carburetter, made by the A. C. Stewart Machine Works, Los Angeles, Cal., the gasolene supply is controlled by the amount of air passing through the carburetter and not by the position of the throttle. Normally, the air valve, free to slide up and down, would rest on its seat, but air must raise it until there is sufficient opening for it to pass. The position of the air valve determines the gasolene supply drawn up a tube in the valve by a constant partial vacuum above the valve, the amount drawn up being determined by the distance a tapered pin projects into a hole in the air valve stem. The air passing through drilled holes in the valve



THE RAYFIELD CARBURETTER

picks up gasolene from the end of the tube and its velocity blows it into a mist.

IGNITION APPARATUS.

Thirty-four magnetos on view, in 22 styles ranging from the one-cylinder arc light cycle type to the eight-cylinder aviation motor size comprise the exhibit of the Bosch Magneto Co., New York City. The DU4 duplex type is entirely new and while accomplishing practically the same result as the dual system, uses a smaller sized dash coil and is less expensive to build. In general the Bosch magneto is so standardized that no radical changes were found advisable; it is the identical line shown last year, only a little more complete than ever. In the rear of the large space devoted to the display a giant spark plug gives off 1½-inch spark, generated by a standard type KS4 Bosch magneto.

Embodying several new features the magneto of the National Coil Co., of Lansing, Mich., is attracting general attention. In this new model the circuit breaker is located on the half-time shaft directly back of the distributor; the platinum point screw may be adjusted while the magneto is running; the back of the magneto is fitted with a timing window, which is an exclusive feature of the National type, and the connection for high tension and spark plug wires is rendered oil and water proof. Dash coils, kick switches, spark coils, box coils, primary coils and National spark plugs form the remainder of the display.

Important improvements are to be noted

on the Pittsfield magneto, made by the Pittsfield Spark Coil Co., of Dalton, Mass. The metal housing has been done away with; the jump spark distributor has been changed to one of the brush type; the secondary circuit is brought over by a metal bridge, instead of by a flexible cord; no soldered connections anywhere; the cam is secured by means of a special key, instead of pinned in as heretofore; the timing lever has been changed to the rear of magneto; improved lubrication to top bearing where formerly it was lubricated by packed grease.

Three new models are shown by the Kokomo Electric Co., of Kokomo, Ind., comprising models B, C and D. Model B is an adaptation of model A, which has been on the market for some time, to meet the requirements of low-speed running. Model C is a small magneto for small motors, with or without distributor, while the new model D is an enlarged model B, having three pairs of magnets instead of two, and being adapted to heavy limousines and motor trucks. Dash coils, vibrators, switches and parts make up the remainder of the exhibit.

Automatic advance or retard in a magneto is obtained by the use of the new governor, which is one of the features of the new Eisemann magneto, exhibited by the Eisemann Magneto Co., of New York City and Detroit. A cage is mounted on an extension of the armature shaft, and is rigidly attached thereto. A block slides in this cage, which is rectangular, and is drilled and threaded for the reception of a helically cut shaft, which is attached to the gearing. The block slides up and down on this threaded shaft. Governor balls are attached to the block by means of links, so that the balls fly out when the shaft is revolved; the action of the links causing the block to slide in the cage, along the threaded shaft, so that either the shaft or the block must rotate slightly. It is the block which yields, rotating slightly and carrying with it the cage and the armature to which the case is fixed, advancing the latter as well as the contact breaker. When the speed drops, the reverse motion takes place, the balls fall in and the block slides back.

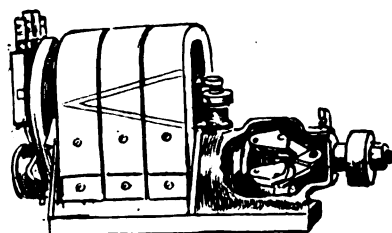
Marburg Bros. are showing the Mea magneto, which was such a novelty at the last Garden show, and on which only minor improvements have been made.

The exhibit of Herz & Co., New York City, includes the well-known Herz magneto. Mercedes spark plugs and a pumping motor called "Minimax," for either direct or alternating current, while on the stand of the Heinze Electric Co., of Lowell, Mass., a full line of standard magnetos, kick switches, coils, timers and spark plugs is displayed.

The standard line of Splitdorf magnetos,

spark plugs and other ignition devices, shown by C. F. Splitdorf, Inc., of New York City, at last year's show, again is displayed at the Garden, with hardly any change in the construction of either.

Among the various magnetos exhibited by the Simms Magneto Co., of England and New York City, is one real novelty—the S. C. magneto. It is of the double system type, low-tension armature and step-up transformer, with the secondary coil in the magneto. Shown for the first time in this country and brought over directly from the Olympia show in London, the Simms motor starter attracts general attention. The armature of this new magneto takes the place of the coil in other dual ignition



EISEMANN AUTOMATIC TIMER

systems; there are no high-tension wires leading through the car; when it is desired to start ignition, the battery is switched on, and after the motor has reached a certain speed the magneto starts working, automatically cutting off the battery.

A new high-tension magneto, which is guaranteed to start any automobile engine up to 30 horsepower on a one-quarter turn of the crank, is shown by the K-W Ignition Co., of Cleveland, Ohio. It is styled model J, and is said to be the simplest magneto made, having only about half as many parts as other high-tension magnetos. Several other high and low-tension magnetos are also shown.

Flanked by an extensive line of F & S ball bearing and a 50 horsepower Gnome rotary motor, U & H magnetos are featured in the exhibit made by J. S. Bretz & Co., of New York City.

Three single spark ignition systems are in evidence—the Atwater-Kent Unisparker, made by Atwater-Kent Mfg. Works, of Philadelphia, Pa.; the B & S igniter, manufactured by the Briggs & Stratton Co., of Milwaukee, Wis., and a new system which has been brought out by the New York Coil Co. The former places the coil on the dash and the contact maker and distributor, which are in one unit, on the engine timer shaft; while the B & S company puts all three—coil, distributor and contact maker—in a single unit, all enclosed in a metal case $3\frac{1}{2}$ inches in diameter and 5 inches in height.

The system shown by the last-named exhibitor is known as the Rhoades Unit

Spark System. This device is a combined timer and distributor, the feature of which is that the length of time which the contacts are together is of fixed duration without regard to the speed of the engine. Other notable features are that the device cannot produce a spark when the engine is rotated in the wrong direction, nor can it stop with the circuit closed. Also shown are a number of styles of coils and a new timer and distributor, which, while somewhat similar to the first-mentioned one, lacks many of its features.

A synchronous distributor for magnetos is being shown for the first time by the Connecticut Tel. & Electric Co., Meriden, Conn., while the Remy Electric Co., of Anderson, Ind., exhibits improved magneto with anti-kick attachment and a new kick switch. Still another ignition system which had been looked forward to with considerable interest, is the L-H-I. magneto, which, however, failed to show up during the first half of the week at its appointed place—the J. H. Lehman Mfg. Co., of New York.

Spark plugs galore are in the Garden. Spit-fire plugs, made by A. R. Mosler & Co., of New York City; Starite spark plugs, shown by R. E. Hardy Co., Chicago, Ill.; Best plugs, made by the Best Ignition Co., of New York City, and Hagstrom plugs, made by Hagstrom Bros. Mfg. Co., of New Lindsborg, Kans. Bougie Eyquem plugs are shown with the Ciglia headlight glare deflector by the Auto Specialties Co., of New York, and the Champion Ignition Co., whose home is in Flint, Mich., exhibit "Ac Star" plugs.

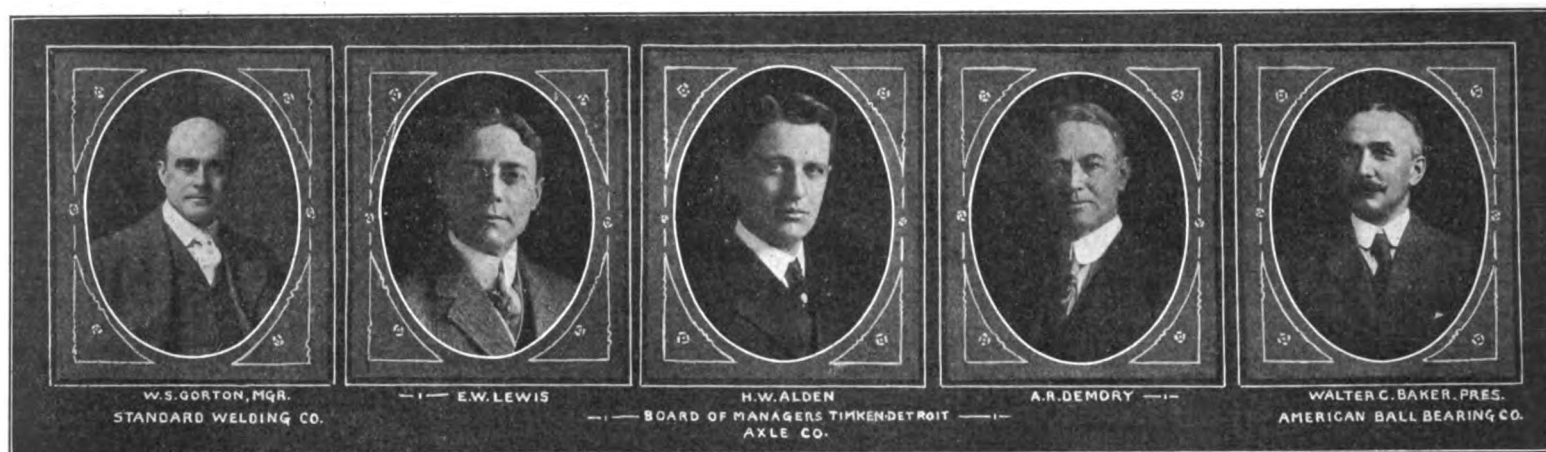
Spark coils, plugs and a new magneto of standard design are offered by the Pittsfield Spark Coil Co., of Dalton, Mass., while the National Carbon Co., of Cleveland, Ohio, shows Columbia batteries. Delco switches, Eastern drycells, Patterson dry-battery holders.

SPEED INDICATORS.

Cardan shaft drive for its speedometers is the novelty shown by the Jones Speedometer Co., of New York City. By means of an adjustable pulley on the cardan shaft around which a narrow belt runs to a small driven pulley attached to a spring clip fitted direct to the frame of the car, the flexible shaft leading to the speedometer is revolved.

Fourteen models of speedometers form the exhibit of the Stewart & Clark Mfg. Co., of Chicago, Ill., among them being the 1911 model with temperature compensating device. This device consists in the raising or lowering of the aluminum cup by means of a lever, placing it in a weaker or stronger magnetic field, according to changes in temperature. Swivel joints are other refinements on the 1911 line of instruments, of which 41 different types are

MEN WHO HAVE MADE THEIR MARKS IN THE FIELD OF ACCESSORY MANUFACTURE.



on the market, ranging from small cycle speedometers to model 41 for motor trucks and electric automobiles.

The new unbreakable driving shaft of the Warner Auto-Meter proved something of an attraction at the stand of the Warner Instrument Co., Beloit, Wis. Many essayed to earn the \$1 promised to anyone who could break it without the use of tools, but so far the dollars have remained with the Warner company. This shaft is of case hardened steel with case hardened steel chain inside instead of the soft chain used before. Swiveled bearings are used in connection with the shaft. A large assortment of cut meters, speedometers and electric light attachments to dials completes the exhibit.

Double dial speedometers form the new part of the exhibit of the Cleveland Speed and Time Indicator Co., of Cleveland, Ohio, although there is one entirely new instrument, intended for use on electric pleasure cars. The Parker Mfg. Co., of Boston, Mass., shows a full line of their standard centrifugal speedometers, a feature of the exhibit being a giant revolving speedometer with glass sides, showing the inner workings of the instrument. "Steady Hand" speedometers are displayed by Hoffecker Co., Boston, Mass., the unique feature of the exhibit being a speedometer which is subjected to hard bumps and yet maintains its "steady hand." Shown by the Electric Speedometer Co., of Washington, D. C., the Hopkins electric speedometer remains practically without change for the coming season. A new trip odometer, known as the "Electrodometer," has been added to the line, and like the speedometer, is electrically operated, no flexible shafts being used. A miniature dynamo at the wheel hub actuates both. The Automatic Appliance Co., of New York City, exhibits Casgrain speedometers, and the American Ever Ready Co. shows speedometers. The Casgrain differs from the others in that it operates by a liquid drag principle. The drive shaft from the wheel turns a paddle which actuates glycerine, with which the

casing is filled, and causes an indicating cylinder to revolve.

LIGHTING SYSTEMS.

Electric lighting systems are present in many diverse styles and kinds. Prominent among the two dozen concerns showing these goods are the Edmunds & Jones Mfg. Co., of Detroit, Mich.; R. E. Dietz, of New York City; Gray & Davis, of Amesbury, Mass., who show a novel tail lamp so arranged as to throw a beam of light over the license number plate, while showing red light to the rear; the Castle Lamp Co., of Toledo, O.; the Willard Storage Battery Co., of Cleveland, Ohio, showing Elba lighting outfits; National Storage Batteries; the Vesta Accumulator Co., of Chicago, Ill.; the Apple Electric Co., of Dayton, Ohio; the Electric Storage Battery Co., of Philadelphia, Pa.; the Culver-Stearns Mfg. Co., of Worcester, Mass., and the Ward Leonard Electric Co., of Bronxville, N. Y.

What is termed, "The automatic steering gear for headlights," is exhibited by the Scranton Equipment Co., of Philadelphia, Pa., and consists of a mechanism by means of which one of the headlights of an automobile is caused to move with the steering wheels. By a slight increase in the length of the arm attached to the steering knuckle, the lamp is made to travel through a radius of 45 degrees while the wheels travel only 30. This arrangement causes the rays of the headlight to project along the road slightly in advance of the actual travel of the wheels, and insures the certain lighting of the road regardless of the sharpness of the turn. A similar arrangement is shown by the Luce Mfg. Co., of Dalton, Mass. The wide variety of lamps on the stand of the Hofacker Mfg. & Supply Co., of New York City, is supplemented by a device called the "Ems light." It is a signal light intended to designate to the following drivers the direction the car to which it is attached is about to take. Scheu's headlight controller, by means of which a driver may control the size of the flame in his headlights from his seat, may be seen at the

stand of the Scheu & Dexter Mfg. Co., of Springfield, Mass. "Spark-O-Lite" lamp lighters are shown by the J. H. Sager Co., of Rochester, N. Y.

Also included among the exhibits of lamps and acetylene generators are Edmunds & Jones, Detroit, Mich.; R. E. Hardy Co., Chicago, who show a new style of side lamps for commercial vehicles, and Gray & Davis, Amesbury, Mass., whose exhibit also includes for the second season their electric lighting dynamo system; and there is present, of course, the Badger Brass Mfg. Co., whose big display of Solars it scarcely is possible to escape.

WARNING DEVICES.

In warning devices there are a number of new electric horns with sharp and discordant tones displayed by several makers, indicating the drawing away from the old-style bulb horn; although the musical horn has not by any means been relegated to the rear; witness the improved Testophone, a French musical horn shown by Charles E. Miller, of New York. The horn which plays a tune of four notes has now been fitted with a number of steel cylinder "records" which are interchangeable and permit of six or more tunes being played. The Gabriel horn, which was shown last year, again appears on the stand of the Gabriel Horn Mfg. Co., of Cleveland, Ohio, along with the Foster shock absorber, which has been standard for several seasons. Standing between the truly musical horns and the harsher tones of the ratchet horns, the Sireno, made by the Sireno Co., of New York, has remained practically unchanged since last year.

On the stand of R. E. Hardy & Co. there appears a new style of electric horn made by the Dean Electric Co., of Elyria, Ohio, and called "Tuto." It belongs to the class of electro-magnetic horns, insofar as it uses an electro-magnet to vibrate an armature, and through this armature a diaphragm producing the sound, but has some distinct features which render it possible to produce two distinct and different signals with

the same push button, same horn and same wiring. The two tones are obtained by merely varying the amount of electric energy flowing through the wires to the horn terminals. A light pressure upon the button causes current to flow to the horn, but places a resistance wire in commission so that but a small quantity of current reaches the electro-magnet. If the button is pressed heavily, the resistance wire is "short-circuited" out of the path of the electric current which thus reaches the magnet with maximum flow. The remainder of the R. E. Hardy stand is taken up by a display of "Starite" spark plugs, which have been a standard article on the market for some time.

Among a multitude of regular reed horns of various sizes and styles, the Nonpareil Horn Mfg. Co., of New York City, displays for the first time an electric signal horn of the motor actuated type. The hammer of the "Clymax Horn" has four points that come in contact with three points on the diaphragm. Each blow of the hammer on the diaphragm is regulated by a spring which serves the double purpose of withdrawing the hammer and compensating for any wear which may take place and alter the tone of the horn.

No improvements having been found necessary on Klaxon horns, these producers of discordant but effective noises were seen in their familiar shapes at the big space of the Lovell-McConnell Co., of Newark, N. J. Also unchanged, save in a few minor points, are the Jericho horn, shown by the Randall Faichney Co., of Boston, Mass., and the Monoplex electric horn, which is manufactured by Atwater Kent Mfg. Works, of Philadelphia, Pa., and shown together with the Unisparker at the Kent display booth. Reed horns of every conceivable shape, size and style are shown by the Auto Supply Mfg. Co., of New York City.

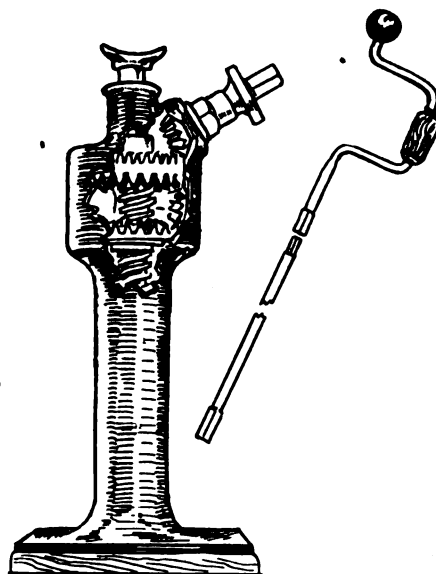
WINDSHIELDS.

Windshields were shown in quantity, but there was very little novelty among them. A rather unique idea is incorporated in the Ball-Locking, Disk-Hinge shield shown by Charles E. Miller, which can be locked securely in four different positions. Other models which show but slight deviations from well-known styles are the Sprague shield, made by the Sprague Umbrella Co., of Norwalk, Ohio, which folds forward on the dash; the Friction windshield, made by the Newark Rivet Works, Newark, N. J.; the automatic windshield, shown by C. A. Mezger, Inc., New York City, who also displays Soot-proof spark plugs. Several styles of windshields make up the exhibit of the Novelty Mfg. Co., of New York City; also included are robe rails, mirrors and other accessories. Union windshields are exhibited by the Union Auto Specialties Co., of Pittsburg, Pa.; Troy windshields are shown by the Troy Carriage Sunshade Co.,

of Troy, O.; the Eagle Co., Newark, N. J., also shows several styles.

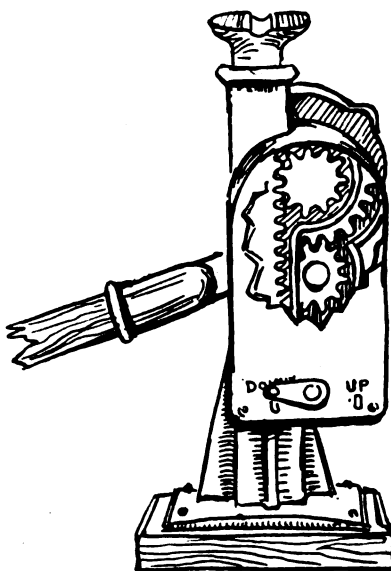
LIFTING JACKS.

A rather unusual departure from former custom is the addition of automobile jacks to the displays of two companies famous in other fields—the Lovell-McConnell Co.,



"RAISWELL" JACK

makers of the Klaxon horn, and the Hartford Suspension Co., manufacturers of the Truffault-Hartford shock absorber. The Lovell-McConnell Co.'s jack, styled the "Raiswell," is a decided innovation. It consists of a steel threaded shaft turning in a steel housing, actuated by a bevel gear and crank pinion, which latter is turned by means of a jointed extension handle on the



HARTFORD AUTO-JACK

principle of the brace-and-bit, giving a ratio of power increase of 6 to 1. By means of the turning motion even an extremely weak person is capable of lifting easily the weight of any automobile. The instrument is guar-

anteed "forever," and sells for \$10. The Hartford Suspension Co. calls its product the "Auto-Jack," and has embodied in it a reversing lever of unique construction. The jack itself is built of malleable iron, the lifting rack cut from solid steel and the actuating mechanism is of spring steel, specially tempered. The jack is set in a hardwood base and sells for \$8.

Several jacks of improved construction are on view at the stand of the Oliver Mfg. Co., of Chicago, Ill. While most of them offer but minor improvements, making them lighter and yet more durable, there are two distinct novelties: One of them a heavy motor truck jack with low bracket for trucks up to eight tons, and the other a "tire-saver" jack with a straight lift of 1½ inches, which locks when passing the center. It is intended for the raising of cars, either at the hubs or at the axle, and keeping them off the floor to save the tires.

Wm. E. Pratt Mfg. Co., of Chicago, Ill., displays jacks exclusively, and the line embraces several kinds of ratchet jacks and one jack known as the Little Giant. "Reliable Tire Savers" also come under the head of jacks, though they are not intended for use on the road, and are shown by the Elite Mfg. Co., of Ashland, Ohio.

AIR COMPRESSORS, ETC.

Among the many articles which the motorist sees spread out before him at the Garden show, few appeal more to him than a motor driven tire pump, and of these there are several new models on view. The Hanna patent power air pump, manufactured by the Troy Auto Specialty Co., of Troy, N. Y., has never been shown at a New York show; it is of the double opposed type, both cylinders cast in one piece from phosphor bronze. The same company shows an automatic bumper and the EXO exhaust horn, which consists of two parallel brass tubes with beveled edge, which are placed at an angle to the exhaust tube. A larger four-cylinder pump is shown by the Kellogg Mfg. Co., of Rochester, N. Y., together with a pressure indicator, and a tire tester "Ezy," which is fitted with a maximum hand so that it can be read after being taken off the valve. An automatic tire pump, which starts when the hose is attached to the tire valve and stops the instant the tube is detached is exhibited by the Auburn Auto Pump Co., of Auburn, N. Y., under the name the Ten Eyck pump.

A single hand operated garage pump is shown by Stevens & Co., of New York, though this company handles a long list of supplies. Somewhat more pretentious is the self-contained power air compressor which is exhibited by the Clayton Air Compressor Works, of New York City. It is operated by a three horsepower electric motor, and is perfectly automatic in operation. A tire pump driven by friction off

the flywheel is shown by Tryon Auto Pump Co., of New York City.

Oil and gasoline storage tanks and systems are shown by a number of exhibitors among whom are the Wayne Oil Tank & Pump Co., of Fort Wayne, Ind. This company shows the familiar Wayne tanks and underground storage systems. On the older models the meters have been replaced by later and much improved instruments, and the location of the locking device changed. A new model in capacities varying from one to five barrels has been added to the line, and shows a number of new features chief among which are the addition of a magnetic float gauge showing the amount of gasoline in the tank and a new style of locking device with which it is impossible to tamper. Several new models of garage oil tanks have been brought out also, and while the mechanism in each is the same, they are built in varying capacities. The Hydraulic Oil Storage Co., of Detroit, Mich., also exhibits gasoline and oil storage tanks which are claimed to be the only ones which can be used in New York State without a pump house. Bowser automatic gasoline pumps are being shown on the stand of the S. F. Bowser Co., of Fort Wayne, Ind.

By an odd chance the only two lever-locking devices on exhibition have been placed side by side, and the looks passing from one to the other of the competitors are not exactly filled with "kindness and charity." One of the two, A. U. Campbell, of Toledo, Ohio, shows a brand-new idea in locking devices, namely, a hollow lever which is locked by the mere turning of a key inserted in the upper end when the lever is in the neutral position. The other,

F. H. Kelsey & Co., exhibits the Saunders' auto lever lock, which consists essentially of a strong hinge, an iron wedge-like block and a Yale lock, and sells for \$5.

A veritable flood of novelties is shown by the Dover Stamping & Mfg. Co., of Cambridge, Mass. Patent shut-off funnels, combination measures and funnels, non-evaporating gasoline measures, tire testing tanks, wagon measures, emergency tanks and compact oilers are some of the new things offered in addition to the great variety of gasoline and oil measures, drip pans, oil cans, funnels, etc., which always have been shown by this concern.

As usually, manufacturers of oils and lubricants occupied many of the stands on the galleries and in the basement, the more prominent of them being: Vacuum Oil Co., Rochester, N. Y.; Havoline Oil Co., New York City; New York & New Jersey Lubricants Co., New York City; Joseph Dixon Crucible Co., Jersey City, N. J.; Adam Cook's Sons, New York City; A. W. Harris Oil Co., Providence, R. I.; White & Bagley Co., Worcester, Mass.; O. W. Young, Newark, N. J.; George A. Haws, New York; International Atcheson Graphite Co., Niagara Falls, N. Y.; Philadelphia Grease Mfg. Co., Philadelphia, Pa.; Keystone Lubricating Co., Philadelphia, Pa.; Wm. P. Miller's Sons, Long Island City, N. Y.; Bliven & Carrington, Inc., New York City, and L. Sonneborn Sons, New York City.

Asbestos in many forms is shown by the Johns-Manville Co., of New York City; leatherette by L. C. Chase & Co., of New York; Grinnell Rist Fit gloves are spread over the stand of the Morrison Ricker Mfg. Co., of Grinnell, Ia.; varnishes in all the

colors of the rainbow (and some that the rainbow never had) are exhibited by Valentine & Co., of New York City; while Mythib, a mysterious tire compound which is said to prolong the life of tires, may be seen at the booth of the Mythib Composition Co., of Hartford, Conn. Large displays of lamps, door handles, side handles, hinges, brackets, mirrors and leather goods of many shapes and uses are those of the Gilbert Mfg. Co., and C. Cowles & Co., both of New Haven, Conn. Wrenches for all purposes are shown by the Coes Wrench Co., of Worcester, Mass.; locknuts by the Columbia Nut & Bolt Co., of Bridgeport, Conn., and pumps and oil cans by the Noera Mfg. Co., of Waterbury, Conn. "Individual" windshields are boosted by the J. Alexander Mfg. Co., of New York City, along with a number of specialties, such as number plate holders, lamp brackets a mechanically operated rear signal light called Tobin's "Which Way," etc.

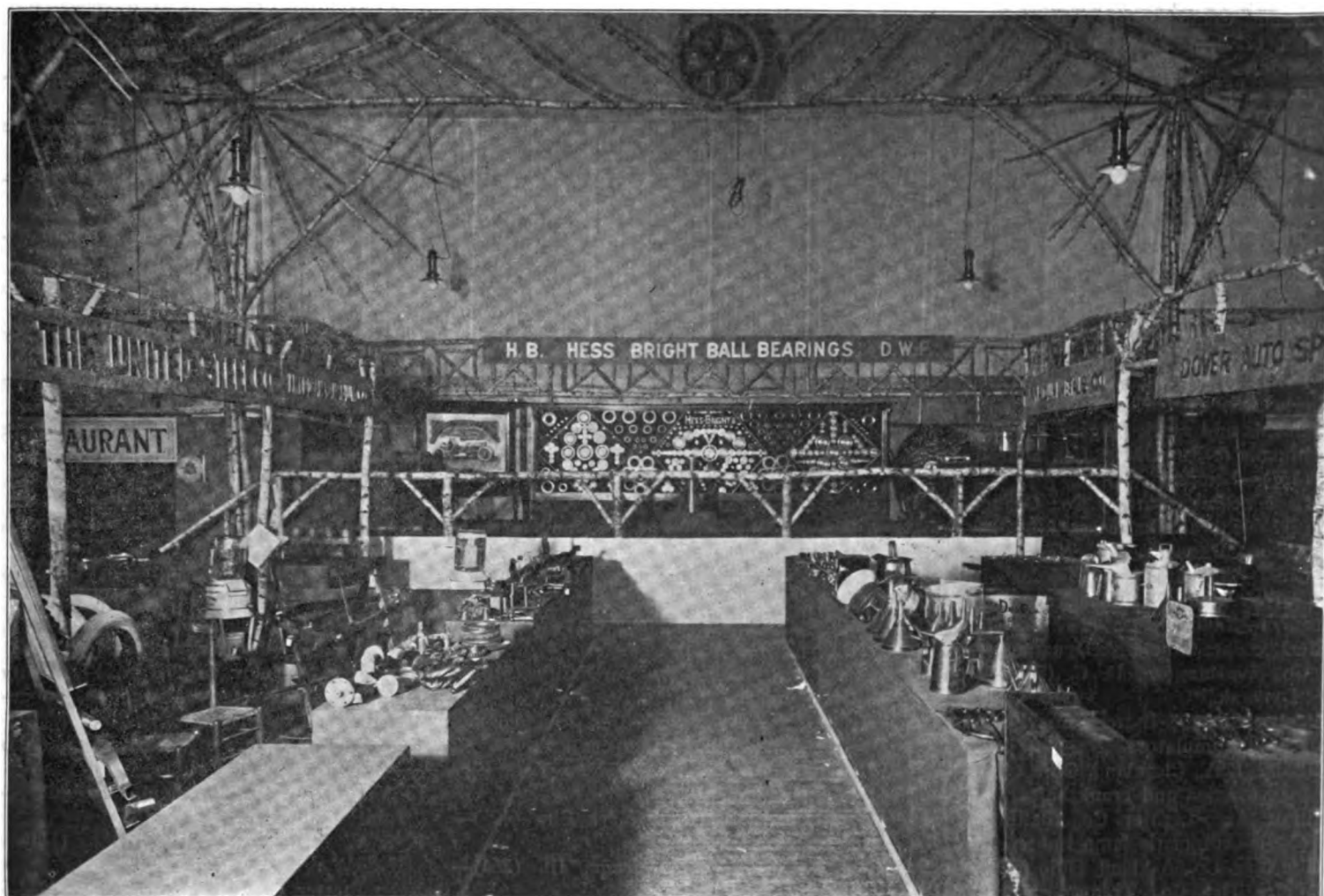
Leathers for upholstery and a very complete line of oil and grease guns are shown, by P. Reilly & Son, of Newark, N. J., and the W. H. Foster Co., of New York City respectively. The Brown Co., of Syracuse, whose tire pressure gauges and other specialties are well known to the motoring public, are exhibiting a new spring shackle bolt and grease cup combined, which is a recent addition to its line.

The newest thing in connection with windshields undoubtedly is the cleaner exhibited by the Gabriel Horn Mfg. Co., of Cleveland. It is a rubber tube drawn over an iron rod, which when pulled by a string attached to steering post describes an arc over the shield, wiping a semi-circular portion clear of water and dirt.

The Accessory Exhibitors, Their Locations and Their Wares

(Those indicated by an asterisk will remain for Part II of the show next week.)

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| Ajax-Grieb Rubber Co., New York City (22)—Ajax tires. | Atlantic Refining Co., Cleveland Ohio (318) | Badger Brass Mfg. Co., Kenosha, Wis. (126) |
| Ajax Trunk & Sample Case Co., New York City (549)—Tire trunks.* | Arco Spatzoff metal polish.* | —Solar lamps and generators. |
| Allen Auto Specialty Co., New York City (623)—Tire covers, locks and holders. | Atlas Chain Co., Brooklyn, N. Y. (567)—Atlas tire chains.* | Baker Sales Co., New York City (422)—Specialties.* |
| Allers, Harry A., New York City (595)—Solderine.* | Auburn Auto Pump Co., Auburn, N. Y. (268)—Tire pumps. | Balzer, Gus, New York City (592)—License plates, monograms and sundries.* |
| Alexander Mfg. Co., J. (415)—Specialties. | Auto Supply Mfg. Co., Brooklyn, N. Y. (618)—Steel lined tubing.* | Baldwin Chain & Mfg. Co., Worcester, Mass. (135)—Baldwin chains and recoil checks and Brown steering gears.* |
| American Ball Bearing Co., Cleveland, Ohio (177)—Ball bearings and axles.* | Automobile Topics, New York City (596)—Publications.* | Barthel, Daly & Miller, New York City (584)—Schafer ball bearings.* |
| American Ever Ready Co., New York City (242)—Ever ready batteries, lamps, etc.* | Automobile Tire Co., New York City (423)—Tires.* | Batavia Rubber Co., Batavia, N. Y. (278)—Batavia tires. |
| Apple Electric Co., Dayton, Ohio (238)—Dynamoes, storage batteries and lighting accessories.* | Auto Wind Shield Co., Cambridge, Mass. (538)—Windshields. | Benford, E. M., Mount Vernon, N. Y. (419)—Spark plugs and timers.* |
| Arnold, N. B., Brooklyn, N. Y. (547)—Slik-up tire preparation.* | Auto Improvement Co., New York City (241)—Self-starting devices and accessories.* | Best Ignition Equipment Co., New York City (405)—Best spark plugs. |
| Asch, B. M., New York City (616)—Motor-rops and specialties. | A-Z Co., New York City (597)—Radiators, hoods, mudguards, metal hampers.* | Bliven & Carrington, Inc., New York City (534)—Oils. |
| Ashland Mfg. Co., Ashland, Ohio (406)—Crown auto jack. | B & L Auto Lamp Co., New York City (575)—Lamps. | Bosch Magneto Co., New York City (224)—Ignition systems.* |



SHOWING THE RUSTIC DECORATION IN THE CONCERT HALL, ALSO THE EXHIBIT OF THE HESS-BRIGHT MANUFACTURING CO.

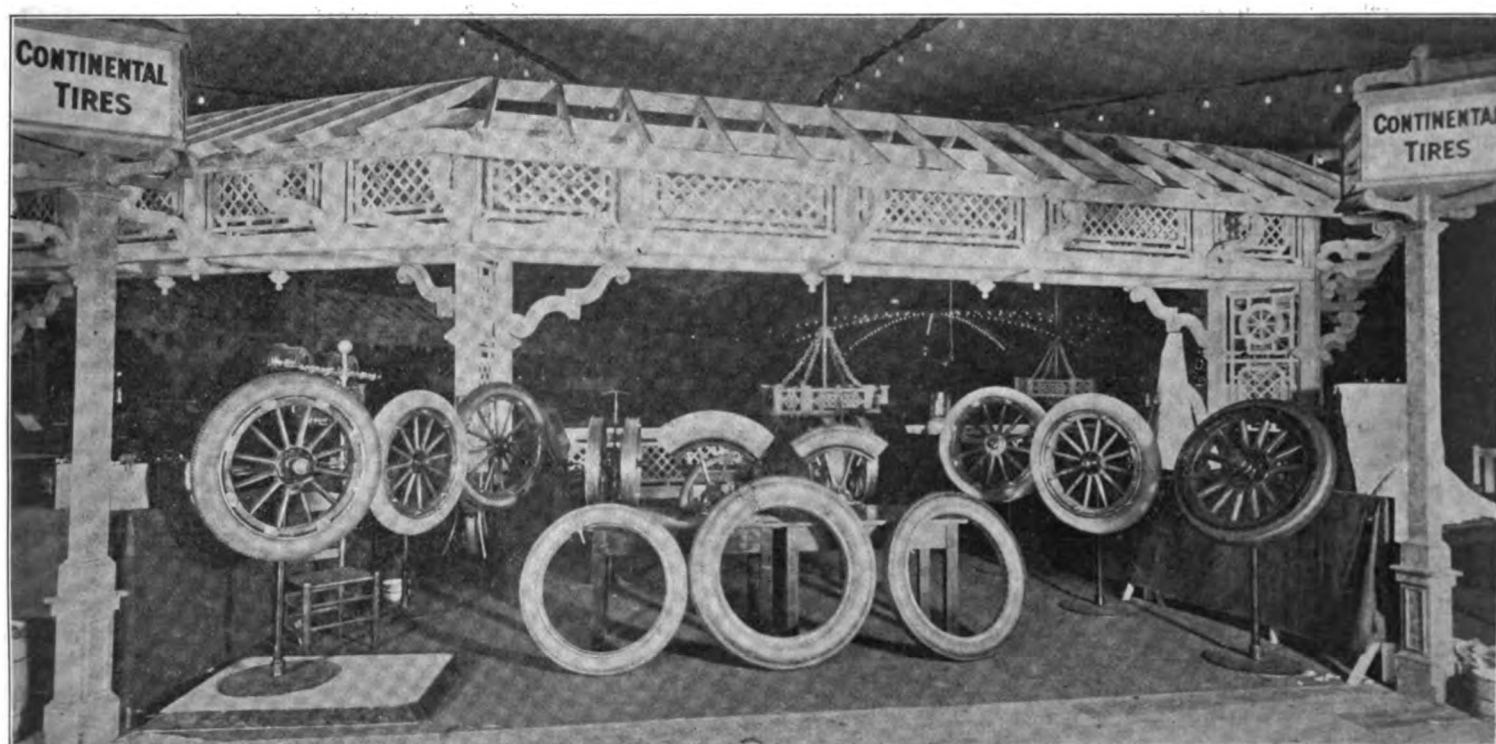
- Bowser & Co., S. F., Fort Wayne, Ind. (191)—Bowser gasoline and oil storage apparatus.*
- Bretz Co., J. S., New York City (586)—U. & H. magnetos, F. & S. annular ball bearings and Bowden wire fittings.*
- Briggs Mfg. Co., Elkhart, Ind. (291)—Briggs magneto.*
- Briggs & Stratton Co., Milwaukee, Wis. (269)—B & S igniter.
- Briscoe Mfg. Co., Detroit, Mich. (186)—Radiators and fittings.*
- Broga Automatic Fastener Co., Syracuse, N. Y. (416)—Broga automatic fasteners.
- Brown Co., Syracuse, N. Y. (572)—Brown tire pressure tester.
- Brown Lipe Gear Co., Syracuse, N. Y. (170)—Transmissions, differentials and steering gears.*
- C-M-B Wrench Co., Syracuse, N. Y. (582)—Silver King socket wrench.
- Calmon Asbestos & Rubber Works of America, New York City (415B)—Packing.*
- Campbell, A. U., Toledo, Ohio (409)—Specialties.
- Carpenter Steel Co., Reading, Pa. (216)—Frames, axles, etc.
- Castle Lamp Co., Toledo, Ohio (181)—Lamps.*
- Century Rubber Trading Co., New York City (322)—Tires.*
- Champion Ignition Co., Detroit, Mich. (627)—Coils, timers, etc.
- Chandler Co., Springfield, Mass. (153)—Nameplates and monograms.*
- Chase & Co., L. C., Boston, Mass. (265)—Tops and top leathers.
- Chilton Co., Philadelphia, Pa. (600)—Publications.*
- Class Journal Co., New York City (505)—Publications.
- Clayton Air Compressor Co., New York City (610)—Garage and tire pumps.*
- Cleveland Speed Indicator Co., Cleveland, Ohio (254)—Cleveland speed and time indicators.*
- Coes Wrench Co., Worcester, Mass. (155)—Wrenches.*
- Columbia Lubricants Co., New York City (223)—Lubricants.*
- Columbia Nut & Bolt Co., Bridgeport, Conn. (154)—Lock nuts.*
- Connecticut Telephone and Electric Co. Meridian, Conn. (152)—Shock absorbers, spark coils, switches and ignition specialties.*
- Consolidated Rubber Tire Co., New York City (148)—Tires.*
- Continental Caoutchouc Co., New York City (228)—Continental tires and rims.*
- Continental Rubber Works, Erie, Pa. (144)—Tires.*
- Cook's Sons, Adam, New York City (157A)—Lubricants.*
- Cook's Standard Tool Co., Kalamazoo, Mich. (259)—Tools.
- Couch & Seeley Co., Boston, Mass. (588)—Casgrain speedometer.
- Cowles & Co., C., New Haven, Conn. (271)—Forgings, mountings and trimmings.
- Cox Brass Mfg. Co., Albany, N. Y. (625)—Brass automobile accessories.
- Cramp & Sons Ship and E. B. Co., Wm., Philadelphia, Pa. (187)—Bronze and bearing metals.*
- Crucible Steel Co., Lansdowne, Pa. (285)—Crucible steel castings.*
- Cross Distributing Co., Frank H., New York City (603)—Supplies.*
- Cupror Co., The, New York City (318)—Metal alloys.
- Culver Stearns Mfg. Co., Worcester, Mass. (404)—Electric lighting specialties.
- Deitz Co., New York City (189)—Lamps.*
- Delcampe Welding Co., Bridgeport, Conn. (535)—Autogenous welding apparatus.
- Detroit Motor Car Supply Co., Detroit, Mich. (542)—Automobile tops.

- Diamond Chain & Mfg. Co., Indianapolis, Ind. (139)—Chains and sprockets.*
- Diamond Rubber Co., Akron, Ohio (128)—Diamond tires.*
- Dixon Crucible Co., Jos., Jersey City, N. J. (182)—Lubricants.*
- Doehler Die Casting Co., Brooklyn, N. Y. (400)—Die cast parts.
- Dorian Remountable Rim Co., New York City (511)—Dorian remountable rims.*
- Downing, Chas. J., New York City (604)—Supplies.*
- Dover Stamping and Mfg. Co., Cambridge, Mass. (313)—Drip pans and funnels.
- Driggs-Seabury Ordnance Corp., Sharon, Pa. (253)—Crank shafts and frames.
- Eagle Co., Newark, N. J. (605)—Windshields and spark plugs.*
- Edmunds & Jones Mfg. Co., Detroit, Mich. (157)—Lamps.*
- Edison Storage Battery Co., Orange, N. J. (257)—Storage batteries.*
- Eiseman Magneto Co., New York City (229)—Magnetos.*
- El Arco Radiator Co., New York City (577)—Radiators.
- Electric Speedometer & Dynamometer Mfg. Co., Washington, D. C. (506)—Hopkins "Dynatak."*
- Electric Storage Battery Co., Philadelphia, Pa.—Accumulators.
- Elliott, H. A., Cleveland, Ohio (410)—Drop forged axles and crankshafts.
- Elliott Auto-Lighter Co., Baltimore, Md. (549)—Automatic lamp lighter.
- Elite Mfg. Co., Ashland, Ohio (580)—Jacks.
- Empire Tire Co., Trenton, N. J. (231)—Empire tires.*
- Ernst's Sons, C. F., Buffalo, N. Y. (514)—Turntables.
- Excelsior Motor & Mfg. Co., Chicago, Ill. (246)—Motors.*
- Fay Machine Tool Co., Philadelphia, Pa. (536)—Automobile machinery.
- Fedders Mfg. Co., Buffalo, N. Y. (539)—Radiators.*
- Fegley Tire Chain Co., Philadelphia, Pa. (526)—Anti-skid chains.*
- Findeisen & Krypt Mfg. Co., Chicago, Ill. (571)—Carburettors and specialties.*
- Firestone Tire & Rubber Co., Akron, Ohio (164)—Firestone pneumatic and solid tires.*
- Fisk Rubber Co., Chicopee Falls, Mass. (178)—Fisk tires.*
- Flechter & Co., L. V., New York City (407)—Specialties.*
- Flentje, Ernst, Cambridge, Mass. (546)—Hydraulic recoil preventer.*
- Foster Co., Walter H., New York City (570)—Specialties.*
- Franklin Mfg. Co., H. H., Syracuse, N. Y. (die casting dept.) (569)—Dies.
- Frost Gear & Tool Co., Jackson, Mich. (309)—Gears.*
- Frasse Co., Peter A., New York City (564)—Tubing and tools.
- G & J Tire Co., Indianapolis, Ind. (131)—G & J tires.*
- Gabriel Horn Mfg. Co., Cleveland, Ohio (180)—Gabriel exhaust horns and Foster shock absorbers.*
- Garage Equipment Mfg. Co., Milwaukee, Wis. (510)—Gem spark plug wrench.*
- Geiszler Bros. Storage Battery Co., New York City (513)—Storage batteries.
- Gemmer Mfg. Co., Detroit, Mich. (245)—Steering gears and parts.*
- Gilbert Mfg. Co., New Haven, Conn. (272)—Bowers carburetter, tire jackets, lamp covers, etc.
- Gibney & Bro., Jas. L., Philadelphia, Pa. (557)—Gibney tires.*
- Globe Anti-Friction Roller Bearing Co., Brooklyn, N. Y. (583A)—Roller bearings.
- Globe Machine & Stamping Co., Cleveland, Ohio (274)—Steel boxes for tools.
- Goodrich Co., B. F., Akron, Ohio (127)—Goodrich tires.*
- Goodyear Tire and Rubber Co., Akron, Ohio (122)—Goodyear tires and air bottles.*
- Gray & Davis, Amesbury, Mass. (130)—Lamps.*
- Gotham Aluminum Solder Co., New York City (553)—Solder.*
- Gyrex Mfg. Co., New York City (516)—Gyrex mixer.
- H. S. M. Auto Switch Co., Philadelphia, Pa. (560)—Cylinder cut-out switch.*
- Hagstrom Bros. Mfg. Co., New York City (403)—Supplies.
- Hamilton, C. M., New York City (425)—Supplies.
- Hardy Co., R. E., Chicago, Ill. (264)—Starite spark plugs.
- Harris Oil Co., R. A., Providence, R. I. (162)—Lubricants.*
- Harrison Radiator Co., Lockport, N. Y. (607)—Radiators.*
- Hartford Rubber Works Co., Hartford, Conn. (125)—Hartford tires.*
- Hartford Suspension Co., Jersey City, N. J. (156)—Truffault-Hartford shock absorbers.*
- Havoline Oil Co., New York City (303)—Lubricants.*
- Haws, Geo. A., New York City (260)—Lubricants.*
- Hayes Mfg. Co., Detroit, Mich. (302)—Radiators, hoods and fenders.*
- Hazen-Brown Co., Boston, Mass. (411)—Vulcanizing materials.
- Heinze Electric Co., Lowell, Mass. (184)—Magnetos, coils and ignition devices.*
- Herz & Co., New York City (190)—Magnetos and ignition devices.*
- Hess-Bright Mfg. Co., Philadelphia, Pa. (304)—Ball bearings.*
- Hilliard Clutch & Machinery Co., Elmira, N. Y., (568)—Clutches.
- Hoffecker Co., Boston, Mass. (236)—Speedometers.*
- Hofacker Mfg. & Supply Co., New York City (532)—Sheet metal supplies.
- Hoffnung & Co., Ltd., S., New York City (585)—Coventry chains and "Fastnut" lock washers.*
- Hollingshead Co., R. M., Camden, N. J. (512)—Whiz automobile specialties.*
- Homo Co. of America, Jersey City, N. J. (261)—Homo mixer.*
- Hopewell Bros., Newton, Mass. (517)—Tire cases.
- Horseless Age, New York City (558)—Publications.*
- Howard Demountable Rim Co., Trenton, N. J. (323)—Howard demountable rim.*
- Hydraulic Oil Storage Co., Detroit, Mich. (507)—Oil tanks and storage systems.*
- Ideal Wind Shield Co., New York City (522)—Windshields and tops.
- International Atcheson Graphite Co., New York City (238)—Oildag and Gredag.
- International Engineering Co., New York City (601)—R B F ball bearings.*
- International Metal Polish Co., Indianapolis, Ind. (415)—Blue Ribbon polish.*
- Jeffery-Dewitt Co., Newark, N. J. (576)—Reliance spark plugs.
- Johns-Manville Co., H. W., New York City (255)—J M non-burn brake lining.*
- Johnson & Co., Isaac G., Spuyten Duyvil, N. Y. (287)—Forgings and castings.*
- Jones Speedometer Co., New York City (141)—Speedometers, odometers, annunciators and specialties.*
- Jones & Co., Phineas, Newark, N. J. (136)—Wood wheels and rims.*
- K-W Ignition Co., Cleveland, Ohio (624)—Ignition devices.
- K & W Mfg. Co., Ashland, Ohio (581)—K & W reliners for tires.
- Keen Starter Co., New York City (529)—Starters.
- Kent Mfg. Works, Atwater, Philadelphia, Pa. (281)—Igniters and timers.
- Keystone Lubricating Co., Philadelphia, Pa. (612)—Keystone oils and grease.*
- Kelsey Co., F. H., Cleveland, Ohio (409A)—Saunders lever lock.
- Kellogg Mfg. Co., Rochester, N. Y. (294)—Kellogg hand and power air pumps.
- Keystone Steel Casting Co., Chester, Pa. (503)—Crucible steel castings.*
- Kilgore Mfg. Co., Boston, Mass. (509)—Kilgore air shock absorber.*
- King Optical Co., Julius, New York City (556)—Goggles.*
- Kokomo Electric Co., Kokomo, Ind. (174)—Kingston coils and timers.*
- Lambert, G. B. (531)—Specialties.
- Leather Tire Goods Co., Niagara Falls, N. Y. (275)—Adjustable tire treads and non-skid bands.
- Lebanon Steel Castings, Co., Lebanon, Pa. (237)—Steel castings.*
- Lee Co., J. Elwood, Conshohocken, Pa. (258)—Jelco-Atlas puncture proof inner case.
- Lefevre Arms Co., Syracuse, N. Y. (543A)—Specialties.*
- Light Mfg. & Foundry Co., Pittstown, Pa. (134)—Aluminum parts and castings.
- Lehman Mfg. Co., New York City (159)—L-H-L ignition system.*

Link Belt Co., Philadelphia, Pa. (235)—Chains.*
 Livingston Radiator & Mfg. Co., New York City (250)—Radiators.*
 Lovell-McConnell Mfg. Co., Newark, N. J. (226)—Klaxon horns.*
 Luce Mfg. Co., Dalton, Mass. 553A)—Lamp brackets.*
 Lutz-Lockwood Mfg. Co., Aldene, N. J. (590)—S-X ignition devices.*
 McCord Mfg. Co., Detroit, Mich. (325)—Radiators, lubricators, fans and gaskets.
 McCue Co., Hartford, Conn. (282)—Axles.
 Manufacturers Foundry Co., Waterbury, Conn. (279)—Castings.

Mosler & Co., A. R., New York City (179)—Spark plugs.*
 Motor Specialties Co., Boston, Mass. (402)—“Flash” auto lighter.
 Motor Parts Co., Plainfield, N. J. (402)—Stanwood steps.
 Motor Vehicle Publishing Co., New York City (552)—Publications.*
 Motor World, New York City (561)—The Motor World.
 Motor, New York City (555)—Publications.*
 Motor Print Co., New York City (551)—Publications.*

Newark Rivet Works, Newark, N. J. (295)—Windshields.
 New England Automobile Journal, Providence, R. I. (593)—Publications.*
 Newmastic Tire Co., New York City (502)—Tire filling compound.*
 New York Sporting Goods Co., New York City (500)—Accessories.*
 New York Coil Co., New York City (574)—Ignition systems.
 New York & New Jersey Lub. Co., New York City (141)—Lubricants.*
 Nonpareil Horn Mfg. Co., New York City (589)—Automobile horns.*



THE BIG DISPLAY OF CONTINENTAL TIRES ON THE BALCONY

Marburg Bros., New York City (307)—Mea magnetos.
 Merchant & Evans Co., Philadelphia, Pa. (501)—Hele-Shaw universal clutch and Star tire jackets, etc.*
 Metal Stamping Co., Long Island City, N. Y. (417)—Stampings.
 Meteor Gas Co. of New York, New York City (578)—Rubber tires.
 Mezger, C. A., Inc., New York City (142)—Windshields and “Soot-proof” plugs.*
 Michelin Tire Co., Milltown, N. J. (225)—Michelin tires.*
 Miller, Chas. E., New York City (161)—Supplies.*
 Miller Rubber Co., Akron, Ohio (249)—Tires.*
 Miller's Sons, Wm. P., Long Island City, N. Y. (565)—Excelsior fibrous oils.*
 Morgan & Wright, Detroit, Mich. (132)—Morgan & Wright tires.
 Morrison-Ricker Mfg. Co., Grinnell, Ia. (158)—Grinnell gloves.*

Motor Car Equipment Co., New York City (562)—Accessories.
 Motz Clincher Tire & Rubber Co., Akron, Ohio (248)—Tires.*
 Muncie Gear Works, Muncie, Ind. (244)—Parts.*
 Muncie Wheel Co., Muncie, Ind. (284)—Wheels.
 Mutty Co., L. J., Boston, Mass. (613)—Automobile top fabrics.
 Mutual Auto Accessories Co., New York City (583)—Supplies.
 Mythib Composition Co., Hartford, Conn. (160)—Preservative for tires.
 National Carbon Co., Cleveland, Ohio (133)—Dry cells.*
 National Coil Co., Lansing, Mich. (206)—Spark coils.
 National Tube Co., Pittsburg, Pa. (138)—Shelby seamless steel tubing.*
 New Departure Mfg. Co., Bristol, Conn. (234)—Ball bearings.*
 New Process Vulcanizer Co., Toledo, O. (290A)—Vulcanizers.

Noera Mfg. Co., Waterbury, Conn. (273)—Pumps and oil cans.*
 North East Electric Co. (518)—Specialties.*
 North & Judd Mfg. Co., New Britain, Conn. (234)—Brass and bronze automobile trimmings.
 Novelty Mfg. Co., Jackson, Mich. (533)—Hoods, mudguards and tanks.*
 Oliver Mfg. Co., Chicago, Ill. (165)—Peerless jacks.*
 Pantasote Co., New York City (192)—Tops and upholstering materials.
 Parker Motor Co., Hartford, Conn. (283)—Parker motors.*
 Pennsylvania Rubber Co., Jeannette, Pa. (146)—Pennsylvania tires.*
 Perfection Spring Co., Racine, Wis. (541)—Automobile springs.
 Philadelphia Grease Mfg. Co., Philadelphia, Pa. 521)—Lubricants.
 Philadelphia Steel & Forge Co., Philadelphia, Pa. (412)—“P F Standard” metal alloys.*
 Pittsfield Spark Coil Co., Dalton, Mass.

(168)—Magnetos, coils, plugs and ignition devices.*
 Polson Mfg. Co., Buffalo, N. Y. (621)—Steel.
 Post & Lester Co., Hartford, Conn. (550)—Accessories.*
 Pratt Mfg. Co., Wm. E., Chicago, Ill. (537)—Specialties.
 Prosser & Son, Thos., New York City (599)—Automobile steels.*
 Protectoroid, New York City (305A)—Varnish protecting liquid.
 Pruden Hardware Co., New York City (519)—Accessories.
 R. I. V. Co., New York City (615)—R. I. V. ball bearings.
 Randall-Faichney Co., Boston, Mass., (149)—Jericho exhaust horns, B-line grease guns and Bing spark plugs.*
 Randerson Auto Parts Co., New York City (540)—Parts.*
 Randolph & Co., New York City (424)—Wholesale haberdashers.
 Rands Mfg. Co., Detroit, Mich. (305)—Tops and accessories.
 Reinhold Noflux Aluminum Solder Co., Newark, N. J. (426)—Solders.*
 Reilly & Son, P., Philadelphia, Pa. (566)—Lap robes.*
 Remy Electric Co., Anderson, Ind. (147)—Magnetos.*
 Republic Rubber Co., Youngstown, Ohio (151)—Republic tires.*
 Reichenbach Laboratories Co., Chicago, Ill. (311)—Vortex vaporizer.
 Robinson, Fred, New York City (539)—Tail lamps.*
 Royal Equipment Co., Bridgeport, Conn. (252)—Band brakes and brake lining material.*
 Rushmore Dynamo Works, Plainfield, N. J. (418)—Lamps.
 Russell Motor Axle Co., North Detroit, Mich. (288)—Axles.
 Rutherford Rubber Co., Rutherford, N. J. (408)—Sterling tires.
 S. B. R. Specialty Co., East Orange, N. J. (614)—S. B. R. muffler cut-out.
 Sager Co., J. H., Rochester, N. Y. (267)—Supplementary springs.
 Scheu-Dexter Mfg. Co., New York City (517)—Headlight controller.
 Scranton Auto Equipment Co., Philadelphia, Pa. (564)—Headlight controller.
 Seamless Rubber Co., New Haven, Conn. (263)—Bragg stitched tires.
 Shaler Co., C. A., Waupun, Wis. (270)—Electric vulcanizers.
 Shawmut Tire Co., Boston, Mass. (611)—Shawmut tires.
 Sheldon Axle Co., Wilkes-Barre, Pa. (617)—Axles and springs.*
 Sherwin-Williams Co., New York City—Paints and varnishes.
 Simms Magneto Co., New York City (587)—Simms magneto.*
 Simonds Mfg. Co., Fitchburg, Mass. (598)—Tools.*

Sireno Co., New York City (317)—Electric horns.
 Smith Co., H. D., Plantsville, Conn. (528)—Forgings and tools.
 Smith Co., A. O., Milwaukee, Wis. (137)—Gears and parts.*
 Sonneborn Sons, Ltd., New York City (524)—Lubricants.
 Sparks-Withington Co., Jackson, Mich. (308)—Fans, stampings and screw machine products.*
 Spicer Mfg. Co., Plainfield, N. J. (169)—Spicer universal joints.*
 Splitdorf, Inc., C. F., New York City (129)—Splitdorf magnetos, plugs and ignition devices.*

Stevens & Co., New York City (520)—Acorn pump nipple.
 Stewart Machine Works, Alfred C., Los Angeles, Cal. (622)—Stewart carburetter.*
 Stewart & Clark Mfg. Co., Chicago, Ill. (230)—Speedometers.*
 Stromberg Motor Devices Co., Chicago, Ill. (243)—Carburetters.*
 Swinehart Tire & Rubber Co., Akron, Ohio (171)—Swinehart tires.*
 Thermoid Rubber Co., Trenton, N. J. (232)—Tires, tubes and brake linings.*
 Timken Roller Bearing Co., Canton, Ohio (166)—Roller bearings.*
 Timken-Detroit Axle Co., Detroit, Mich. (167)—Axles.*



GENERAL VIEW SHOWING A CORNER OF THE ELEVATED PLATFORM

Sprague Umbrella Co., Norwalk, Ohio (301)—Tops and windshields.
 Springfield Metal Body Co., Springfield, Mass. (193)—Metal bodies.
 Standard Roller Bearing Co., Philadelphia, Pa. (163)—Roller bearings.*
 Standard Welding Co., Cleveland, Ohio (176)—Electrically welded tubing and parts.*
 Standard Thermometer Co., Boston, Mass. (286)—Standard speedometer.*
 Standard Metal Work Co., Thompsonville, Conn. (563)—Manifolds.
 Stanley, John T., New York City (554)—Oils and greases.*
 Star Rubber Co., Akron, Ohio (251)—Star tires.*
 Star Speedometer Co., Danville, Pa. (619)—Star speedometer.*
 Star Starter Co., New York City (543)—Starting appliances.*
 Stein Double Cushion Tire Co., Akron, Ohio (256)—Tires.*

Tingley & Co., Chas O., Rahway, N. J. (602)—C. O. T. electrical horn.*
 Tracy, Joseph, New York City (545)—Dynamometer and testing apparatus.*
 Troy Auto Specialties Co., Troy, N. Y. (315)—Windshields.
 Troy Carriage Sunshade Co., Troy, O. (548)—Windshields and tops.
 Tryon Auto Pump Co., New York City (533)—Friction driven tire pump.
 Turner Brass Works, Sycamore, Ill. (240)—Brass parts and fittings.*
 Tuttle Motor Co., Canastota, N. Y. (608)—Motors.*
 U. S. Light & Heating Co., New York City (150)—Storage batteries.*
 United States Co., Canton, Ohio (320)—Vanadium steel.*
 Universal Rim Co., Chicago, Ill. (579)—Universal demountable rims.
 Union Auto Specialties Co. (530)—Supplies.*

United States Wheel Co., New York City (305)—Solid rubber tires.
 Universal Tire Protector Co., Angola, Ind. (414)—Universal tire protector.
 Vacuum Oil Co., Rochester, N. Y. (185)—Lubricants.*
 Valentine & Co., New York City (183)—Varnishes.*
 Valve Seating Tool Co. (620)—Valve grinding tools.*
 Vanadium Sales Co., Pittsburg, Pa. (321)—Steels and alloys.*
 Vanadium Metals Co., Pittsburg, Pa. (312)—Victor vanadium bronze.*
 Van Wagner Co., E. B., Syracuse, N. Y. (262)—Dies and finished metal castings.*
 Veeder Mfg. Co., Hartford, Conn. (124)—Tachometers and odometers.*
 Vesta Accumulator Co., Chicago, Ill. (233)—Accumulators.*
 Vehicle Hood & Apron Co., Columbus.

Ohio (523)—Gordon tire covers.
 Voorhees Rubber Mfg. Co., Jersey City, N. J. (421)—Rubber hose and packing.
 Ward Leonard Electric Co., Bronxville, N. Y. (573)—Car lighting dynamo.
 Warner Gear Co., Muncie, Ind. (175)—Gears and parts.*
 Warner Instrument Co., Beloit, Wis. (172)—Warner autometers and clocks.*
 Warner Mfg. Co., Toledo, Ohio (247)—Transmissions and steering gears.*
 Wayne Oil Tank and Pump Co., Fort Wayne, Ind. (544)—Wayne oil tanks.*
 Weed Chain Tire Grip Co., New York City (143)—Weed tire chains.*
 Western Tool & Forge Co., Brackenridge, Pa. (314)—Forgings and tools.*
 Westen Mfg. Co., Newark, N. J. (609)—Westen shock absorbers.*
 Wheeler & Shebler, Indianapolis, Ind. (145)—Carburettors and magnetos.*

White & Bagley Co., Worcester, Mass. (316)—Lubricants.
 Whitlock Coil Pipe Co., Hartford, Conn. (289)—Intake and exhaust pipes.
 Whitney Mfg. Co., Hartford, Conn. (123)—Whitney chains.*
 Willey Co., New York City (420)—Automobile paints.*
 Williams Co., J. H., New York City (173)—Forgings.*
 Willard Storage Battery Co., Cleveland, Ohio (310)—Elba lighting outfits.*
 Witherbee Igniter Co., Springfield, Mass. (271)—Magnetos and storage batteries.
 Wyckoff Lumber Co., Ithaca, N. Y. (515)—Portable garages.
 Wright Wrench & Forging Co., Canton, Ohio (401)—Wrenches.*
 Young, Orlando W., Newark, N. J. (293)—Lubricants.*



Now for the Truck's Turn in the Garden



When the clock marks XI next Saturday night, Part I of the show in Madison Square Garden must "get a move on," so to speak, and get out of the way for Part II, which means that the pleasure cars which now occupy the building must be removed and that all manner of commercial vehicles, large and small, will take their places. There also will be a considerable exodus of accessory exhibitors, but many, very many will remain and they will stay just where they now are, occupying the same booth. Those who will "sit out" the second week's show are indicated by asterisks in the summary of exhibits in Part I.

As an exhibit of commercial vehicles Part II of the show in Madison Square Garden will be conspicuous in three ways. It will be the first show in New York to be devoted mainly or exclusively to the business vehicle, and the second of the sort to be held in this country under National auspices. The first, it will be remembered, was held in Chicago in 1907 as a supplement to the annual show of the National Association of Automobile Manufacturers. The second point of distinction of the forthcoming commercial exhibit is its value as a demonstration of the independence of business vehicle design from that of the lighter pleasure car. The divorcement of the two fields never has been really apparent until this year. It is now fully established, and the show, coming as it does immediately on the heels of the largest exposition of pleasure vehicles that ever was held in New York, will afford a striking contrast in mechanical constructions.

The third point of distinction of Part II will be the advent of several new and hitherto unshown gasoline machines that are products of concerns that already have

won distinction in the other side of the industry. There will be no less than five products which are entirely new though produced by builders of experience, and three others which are new to the extent that they have not been exhibited in a previous New York show. The products which are entirely new are the Pierce-Arrow, Stearns, Kissel, Reo and Peerless. Their newness, however, signifies merely that they have not been on exhibition before; several of them have been in process of construction or actually under test service for many months. The products which are new to the extent that they have not before been displayed at a New York show are the Garford, Morgan and McIntyre.

As expressing what may be termed the very latest thought of the industry compressed into complete products, these new vehicles naturally will prove worthy of close study. The Pierce-Arrow truck, for example, is exceedingly modern in its characteristics. It is equipped with an engine of the true long-stroke type, the cylinder dimensions of its quadruple motor being $4\frac{7}{8}$ by 6 inches, and its rated output 38 horsepower when turning at a normal speed of 950 revolutions per minute. It is further distinguished by its final drive, which is an adaptation of the worm principle. Worm drive is slowly gaining in popularity both in this country and abroad, but so far as is known the present instance is the first in which it has been applied to a vehicle of so large capacity; the rating of the new Pierce truck is five tons.

In the new Stearns product, like the last-named, the first in the business vehicle line to be produced by its builder for the market, a feature of special merit well worthy of attention is the mounting of the power

plant. To protect the mechanism against the heavy shocks and strains due to the haulage of big loads over rough roads, a special sub-frame mounting has been adopted. The engine and change gear are carried on this sub-frame, and the latter, instead of being rigidly fastened to the main frame structure, is carried on springs at the forward end and pivoted in the rear. The result is that the parts are saved many unnecessary stresses, while the springs supporting the main frame may be made sufficiently heavy to withstand all stresses, since they are not depended on to relieve the active mechanism from shock. The Stearns truck is rated at five tons, and while following the general lines of the pleasure cars which the same manufacturer has been successful in producing in the past, displays a number of points which are entirely original. Bosch dual ignition and the dry-plate type of multiple disk clutch are two of its features which are indicative of up-to-date equipment and construction.

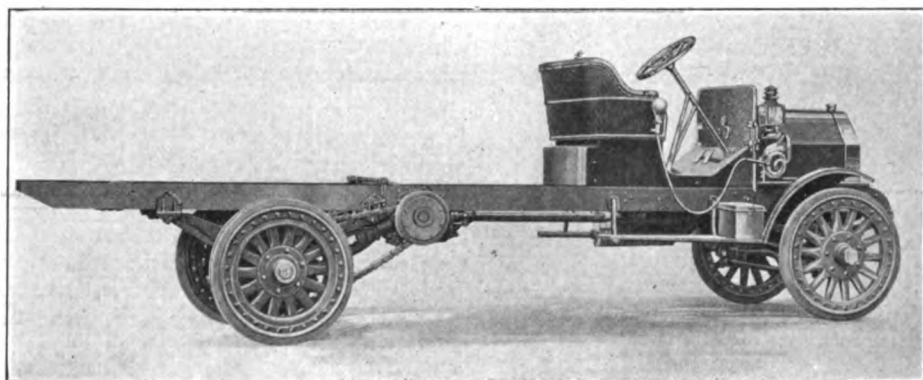
The Kissel truck, which is of three-ton capacity, is distinguished by a new form of differential locking device which is so constructed as to be operable from the driver's seat by means of a pedal. Throwing the differential out of action temporarily, of course, is of material assistance in extricating the machine from difficulties when one driving wheel is inclined to spin without traction, either on ice or in deep mud. The more common method of locking hitherto employed, has required the driver to dismount and go around to the side of the machine to make a special adjustment.

The long-stroke motor is a feature that has been adopted in the construction of the new Reo trucks, as well as in other commercial vehicles. Its application in this

particular instance is significant, however, because the machines are of the lighter order. One of the two models produced is of 1,500 pounds capacity, and the other has a much smaller capacity and is a neat version of the light delivery idea. The latter is equipped with a single cylinder, horizontal motor, planetary change gear and single-chain drive. The larger machine, on the other hand, necessarily is of more substantial construction, and has a motor the cylinder dimensions of which are $4\frac{3}{4}$ inches bore by 6 inches stroke.

Among the several vehicles which will be exhibited for the first time in a New York show, the Garford is an example of the friction method of transmission construction, worked out in a very thorough and logical manner. It is of the four disk type. The

points of particular individuality or excellence. Roughly speaking, the more notable ones may be divided into two groups as light and heavy vehicles, though in several cases the lines are so extensive as to bridge over both classifications. Among the heavier trucks may be mentioned the Alco, Knox, Sampson, White, Hewitt, Mack and Rapid. The latter line, however, is one of those that is characterized by a plurality of models, and hence is also to be included among the lighter machines intended rather for delivery purposes than for heavy trucking. Others in that class are the Overland, Autocar, Grabowsky and Randolph. The Frush is the smallest machine in this particular class, and is intended for the rapid transport of light packages in this respect it stands almost alone in its class. The



THE NEW STEARNS THREE TON TRUCK

driving plates, which are used for forward and backward vehicle movement respectively, are adapted to be moved back and forth longitudinally of the vehicle in order to secure engagement with the two driven disks which, in turn, are mounted on independent countershafts. The effect of moving the driving instead of the driven disks to secure engagement is to permit the countershaft to be rigidly mounted in permanent alignment. In order to secure uniform engagement of both driven members, however, special means of compensation has been adopted in the form of an original type of bearing for the ends of the two countershaft members. The Garford product is built in one, two and three-ton models.

The Morgan is of the heavier and more solidly built class of commercials, and is one of the comparatively few exponents of the planetary change-speed gear as applied to very heavy loads. Besides this feature it is built on the unit plan, which is to say, that its various parts—those of the power plant and those belonging directly to the running gear—are divided into groups, the groups being treated as independent, though suitably co-ordinated mechanisms, with a view to promoting inter-changeability.

In the line of products which already have been seen in Madison Square Garden at one time or another will be a number that are noteworthy for certain individual

Franklin belongs rather more in the class of light and medium capacity trucks, and is distinguished by the use of worm drive and pneumatic tires.

In the way of special machines there will be the Pope-Hartford public-service vehicles which are built for police patrol and ambulance work, as well as for fire and insurance patrol uses; likewise the Knox line, which has been expanded in the same direction. While service of the general nature indicated presents several features differing from those involved in the building of trucks and delivery wagons, these and a number of the other makes shown have been specifically developed in this particular direction.

Electric commercial vehicles will be staged by such old and accomplished manufacturers as the Studebaker Automobile Co., Waverley Co., General Vehicle Co. and the Lansden Co., which is to make its first appearance at the Garden, though not a new exhibitor at New York shows. The Studebaker and General Vehicle lines, in particular, are noteworthy for their wide range of size and type. The Lansden product is specialized along the line of light construction in proportion to capacity. The Waverley, one of the oldest products at the show, is built both in light and heavy types, but the light, shaft-driven model is an entirely new adaptation of the mechanical principles which for several years have been employed

most successfully on the pleasure cars of the same make.

There will also be on exhibition a number of electric pleasure cars in addition to those of the Waverley line, among them the Detroit, a product which, it may be added, has a new representative in the delivery wagon field; the Hupp-Yeats, which is a new product, so far as the show is concerned; while still another new name on the exhibitors' list is that of the Ward, which is built by the Ward Motor Vehicle Co.

The full list of exhibitors is as follows:

Commercial Cars—Gasolene.
Alden-Sampson Mfg. Co., Detroit, Mich. (12A)—Sampson trucks.
American Locomotive Co., New York City (19A)—Alco trucks.
Atlas Motor Car Co., Springfield, Mass. (114A)—Atlas delivery wagons.
Autocar Co., Ardmore, Pa. (9A)—Autocar wagons and public-service vehicles.
Bartholomew Co., Peoria, Ill. (—)—Glide delivery wagons.
Brush Runabout Co., Detroit, Mich. (113A)—Brush delivery wagons.
Buick Motor Co., Flint, Mich. (101A)—Buick delivery wagons.
Cartercar Co., Pontiac, Mich. (102A)—Cartercar delivery wagons.
Franklin Mfg. Co., H. H., Syracuse, N. Y. (105A)—Franklin trucks and delivery wagons.
Garford Co., Elyria, Ohio (117A)—Garford trucks.
Grabowsky Power Wagon Co., Detroit, Mich. (13A)—Grabowsky trucks.
Kissell Motor Car Co., Hartford, Conn. (119A)—Kissell trucks.
Knox Automobile Co., Springfield, Mass. (5A)—Knox public-service vehicles.
McIntyre Co., W. H., Auburn, Ind. (116A)—McIntyre delivery wagons.
Mack Brothers Motor Car Co., Allentown, Pa. (18A)—Mack trucks and buses.
Metzger Motor Car Co., New York City (8A)—Hewitt trucks.
Morgan Co., R. L., Worcester, Mass. (2A)—Morgan trucks.
Packard Motor Car Co., Detroit, Mich. (17A)—Packard trucks.
Peerless Motor Car Co., Cleveland, Ohio (7A)—Peerless trucks.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (3A)—Pierce-Arrow trucks.
Pope Mfg. Co., Hartford, Conn. (103A)—Pope-Hartford public-service vehicles.
Randolph Motor Car Co., Chicago, Ill. (115A)—Randolph trucks.
Rapid Motor Vehicle Co., Pontiac, Mich. (11A)—Rapid trucks.
Reliance Motor Truck Co., Owosso, Mich. (10A)—Reliance trucks.
Reo Motor Truck Co., Lansing, Mich. (106A)—Reo trucks.
Stearns Co., F. B. Cleveland, Ohio (1A)—Stearns trucks.
White Co., Cleveland, Ohio (16A)—White gasolene trucks.

Willys Overland Motor Truck Co., Indianapolis, Ind. (107A)—Overland delivery wagons.

Electric Vehicles.

Anderson Electric Car Co., Detroit, Mich. (21A)—Detroit.

General Vehicle Co., New York City (20A)—General.

Hupp-Yates Motor Car Co., Detroit, Mich. (6A)—Hupp-Yates.

Lansden Co., Newark, N. Y. (14A)—Lansden.

Studebaker Automobile Co., South Bend, Ind. (15A)—Studebaker.

Waverly Co., Indianapolis, Ind. (4A)—Waverly.

Ward Motor Vehicle Co., New York City (118A)—Ward.

Motorcycles.

American Motor Co., Brockton, Mass. (715)—M. M.

Aurora Automatic Machinery Co., Chicago, Ill. (710)—Thor.

Consolidated Mfg. Co., Toledo, Ohio (713)—Yale.

Detroit Motorcycle Mfg. Co., Detroit, Mich. (725)—Detroit.

Emblem Mfg. Co., Angola, N. Y. (711)—Emblem.

Excelsior Supply Co., Chicago, Ill. (709)—Excelsior.

Harley-Davidson Motor Co., Milwaukee, Wis. (707)—Harley-Davidson.

Hendee Mfg. Co., Springfield, Mass. (702)—Indian.

Marvel Motorcycle Co., Brockton, Mass. (716)—Marvel.

Merkel Light Motor Co., Pottstown, Pa. (714)—Merkel.

Miami Cycle & Mfg. Co., Middletown, Ohio (706)—Racycle.

New Era Auto-Cycle Co., Dayton, Ohio (724)—New Era Auto-Cycle.

N. S. U. Motor Co., New York City (705)—N. S. U.

Pierce Cycle Co., Buffalo, N. Y. (712)—Pierce.

Pontiac Motorcycle Co., Pontiac, Mich. (704)—Pontiac.

Reading Standard Co., Reading, Pa. (708)—Reading Standard.

Reliance Motorcycle Co., Owego, N. Y. (703)—Reliance.

S. D. Mfg. Co., Brooklyn, N. Y. (720)—S. D.

Wagner Motorcycle Co., St Paul, Minn. (722)—Wagner.

Motorcycle Accessories.

Baker & Co., F. A., New York City (701)—Accessories.

Bicycling World and Motorcycle Review, New York City (700)—Publications.

Eclipse Machine Co., Elmira, N. Y. (719)—Coaster brakes.

Mesinger Mfg. Co., H. & F., New York City (723)—Saddles.

Motorcycle Publishing Co., New York City (717)—Publications.

Motor Car Equipment Co., New York City (721)—Accessories.

Nathan Novelty Mfg. Co., New York City (726)—Accessories.

Syracuse & Elbridge Glove Co., Syracuse, N. Y. (737)—Gloves.



THE FINISH OF THE SELDEN PATENT

Being the Full Text of the Court of Appeal's Decision Declaring that it Does Not and Never Did Apply to the Modern Gas Engine.

Appeals from the decrees of the Circuit Court, Southern District of New York, sustaining the validity, and finding infringement, of Letters Patent No. 549,160, granted November 5, 1895, to the complainant, George B. Selden, for an Improved Road Engine. The corporation complainant is the exclusive licensee under the patent. The opinion of the Circuit Court is reported in 172 Fed. 923.

Noyes, Circuit Judge:

Although the title of the alleged invention as stated in the preamble of the patent is an "Improved Road Engine" it is claimed to embrace the essential elements of the modern automobile and has been sustained as being "so fundamental and far-reaching as to cover every modern car driven in any way by petroleum vapor and as yet commercially successful."

The subject is most important; the interests involved, of great magnitude; the record, phenomenally long, and the questions presented, complex. In examining these questions we have been greatly aided by the work of the Judge of the Circuit Court in blazing the way through the mass of testimony and defining the issues to be decided. While we may be unable to adopt the conclusions stated in his very able opinion, we must at the outset acknowledge our indebtedness to it.

Ordinarily the first thing to be looked at in a patent suit is the patent. That is the source and measure of the patentee's rights. But in this case it seems desirable before we examine the patent to take

up some preliminary considerations, the disposition of which may serve to indicate the standpoints from which the patent should be regarded in the examination to follow.

This patent was applied for in 1879 and granted in 1895. For over sixteen years the application lay in the Patent Office and the applicant took full advantage of the periods of inactivity permitted by the rules and statutes. It is apparent that he delayed just as long as possible the issue of the patent to him. During this long time the automobile art made marked advances along different lines, and when in 1895 the patent was granted, it disclosed nothing new. Others had then made the patentee's discovery and had reduced it to practice in ignorance of what he had done. While he withheld his patent, the public learned from independent inventors all that it could teach. For the monopoly granted by his patent he had nothing to offer in return. The public gained absolutely nothing from his invention whatever it was. From the point of view of public interest it were even better that the patent had never been granted. Judge Hough was quite within bounds in saying:

"No litigation closely resembling these cases has been shown to the court and no instance is known to me of an idea being buried in the patent office while the world caught up and passed it, and then embodied in a patent only useful for tribute."

It is urged that we should regard unfavorably the patent on account of this delay in the Patent Office;

and should seek to avoid giving it a broad construction, and should permit the alleged abuse of the law to weigh against the standing of the complainants in a court of equity. But the patentee acted wholly within his rights. He merely took advantage of the delays which the law permitted him. He followed strictly the statutes and rules of procedure, and the courts cannot exact a greater measure of diligence from him. When the patent was granted under the authority of the law, it became entitled to the consideration accorded to any other patent. If the statutes and rules permit unnecessary delays, they should be changed, but we reject the view that this Court owes any duty to relieve against their operation. This patent, even if it be useful only for tribute, must be viewed without prejudice and with absolute judicial impartiality.

But while we should be careful to avoid viewing the patent with disfavor, we should be equally careful to avoid considering it with too much favor on account of its subject-matter. Fifteen years ago hardly anyone had seen an automobile. Ten years ago they were rare. Today they are in use by tens of thousands, and tens of millions of dollars are invested in them and in their manufacture. The development of the automobile has been nothing short of phenomenal and everyone is inevitably impressed with its importance. Consequently, when we see that thirty years ago an application for a patent was filed which even pointed the way to the modern

automobile, we can hardly fail to receive the impression that an idea of great importance must have been embodied in it. But, as we shall later see, the development of the automobile was not so sudden as we have thought. It developed step by step at the beginning; the startling activity has come at the end. Moreover, a great idea may be embodied in a patent, and yet the patentee take nothing of value by it. That which he takes is that which he describes and claims. His discovery may be of importance, but he may limit it by his claim and his claim may proceed in the wrong direction.

So, from any standpoint, we come in this as in other patent causes to the patent in suit in which at its commencement the patentee thus states the object of his invention:

"The object of my invention is the production of a safe, simple and cheap road-locomotive, light in weight, easy to control, and possessed of sufficient power to overcome any ordinary inclination."

The patentee then states the difficulties encountered, his manner of overcoming them and the advantages arising therefrom:

"The difficulties heretofore encountered in the application of steam to common roads are the great weight of the boiler, engine, water, and water tanks, the complicated apparatus necessary to adapt the machine to the roughness of the roads which it must traverse, the necessity of the attendance of a skilled engineer to prevent accidents, and the unsightly appearance of the locomotives built on this plan. I have succeeded in overcoming these difficulties by the construction of a road-locomotive propelled by a liquid-hydro-carbon engine of the compression type, of a design which permits it to be operated in connection with the running gear, so that the full carrying capacity of the body of the vehicle can be utilized for the transport of persons or goods, and which, by dispensing with skilled attendance and with steam boilers, water, water-tanks, coal and coal bunkers, very largely reduces the weight of the machine in proportion to the power produced and enables me, while employing the most condensed form of fuel, to produce a power road wagon which differs but little in appearance from and is not materially heavier than the carriages in common use, is capable of being managed by persons of ordinary skill at a minimum of trouble and expense, and which possesses sufficient power to overcome any usual inclination."

The patent then describes—as we shall later see with more particularity—the body, wheels and connections of the vehicle and the engine furnishing the motive power.

The first claim of the patent is the broadest and the questions of validity and infringement have been presented wholly with respect to it. It is the vital claim in the case and is as follows:

"The combination with a road locomotive, provided with suitable running gear, including a propelling wheel and steering mechanism, of a liquid hydrocarbon gas engine of the compression type, comprising one or more power cylinders, a suitable liquid fuel receptacle, a power shaft connected with and arranged to run faster than the propelling wheel, an intermediate clutch or disconnecting device and a suitable carriage body adapted to the conveyance of persons or goods substantially as described."

The defenses are:

(1) That if the patent be broadly construed it is invalid;

(2) That if it be construed less broadly, but according to legitimate rules of construction, the defendants do not infringe.

In considering the validity of the patent, we are met, at the outset, with contentions of some of the defendants that prior uses anticipate and that which it discloses is an aggregation rather than a combination. But the questions of novelty and invention often run together, and the inquiry whether a given association of elements is more than an aggregation is only a phase of the question of invention. We shall primarily test the question of the validity of the patent by the answer to the inquiry whether it discloses the exercise of the inventive faculties in view of the prior art.

This requires an examination of the state of the art in 1879—the date of the application and, consequently, of the alleged invention. In tracing its development we shall find that the combination described in the claim developed, to some extent, along with its elements. But this was by no means entirely so, and we think that a correct appreciation of the subject can best be obtained by considering:

(A) The development of the elements of the combination;

(B) The development of the combination itself—the motor vehicle.

(The date of the filing of the application—May 8, 1879—is *prima facie* the date of the alleged invention. The complainants, however, seek to overcome the presumption that that is the date and to carry it back to December, 1877. But while we have no doubt that the patentee conceived the general idea of the subject of the patent some time before he applied for it, there was no such reduction to practice or description of the whole structure as would serve to antedate the date of the application. It is true that the patentee made one of the elements of the combination—the engine—some months before he applied for the patent, but he did not make the combination itself—the road-locomotive—until many years afterwards, and that is what he claims a patent for. Moreover we fail to find that any adequate description of the combination claimed was made any substantial time before the application. But while it is well to fix a starting point, the question between the dates is of little practical importance, as we find no prior use materially affecting the patent between 1877 and 1879.)

The claim is for a combination possessing six elements.

(1) "A road locomotive provided with suitable running-gear, including a propelling wheel and steering mechanism;"

(2) "A liquid hydrocarbon gas engine of the compression type, comprising one or more power cylinders;"

(3) "A suitable liquid fluid receptacle;"

(4) "A power shaft connected with and arranged to run faster than the propelling wheel;"

(5) "An intermediate clutch or disconnecting device;"

(6) "A suitable carriage body adapted to the conveyance of persons or goods."

Or, departing from the language of the claim, these are the elements:

(1) The carriage (including the running gear, the body, the propelling wheel and the steering mechanism);

(2) The drive (including the power shaft and connections and the intermediate clutch or disconnecting device);

(3) The engine (including the liquid fluid receptacle).

The claim contains no limitations with respect to the carriage element, and the specification states that the body of the road locomotive "may be of any ordinary or desired form with any number of seats and with or without a top."

Reading the claim by itself any wheeled vehicle for the conveyance of persons or goods would come within its language, and the only limitation the specification could possibly impose upon it would be that the carriage should be of such a type that the engine could be located upon it without obstructing the body or platform.

So, there are no limitations in the claim with respect to the running gear, propelling wheel or steering mechanism. While the specification and drawings show particular structures, there is no suggestion that the claim is confined to any particular form. Manifestly there was nothing novel in the carriage element.

With respect to the drive element: The claim describes no particular form of power shaft except that it shall be so connected and arranged as to run faster than the propelling wheel. Thus any speed reducing gear between the driving and the driven shaft would come within the language used. Gearing down to gain leverage under similar conditions was, however, old in the art. Mr. Dugald Clerk—the distinguished and very competent witness for the complainants—says:

"It was old in the art for a motive power engine to run at a greater speed than the propelling axle."

The claim likewise imposes no limitations upon the intermediate clutch or disconnecting device and such devices were old in the art in 1879. They were commonly interposed between stationary engines and the load and had been employed in steam engines; the purpose being the same as here—to permit the engine to run without driving the vehicle. The drive element of the claim was old.

The engine element in the claim is the one which requires the most extended consideration. It is the feature of the patent.

The engine is described in the claim as "a liquid hydrocarbon gas engine of the compression type." Being an engine of this kind it must, in the first place, be an internal combustion engine which (using

the definitions in the complainants' brief) is an engine in which "the fuel is burned in the engine cylinder and the heat energy thereof utilized by the expanding gases acting on the piston." In the second place it must be a gas engine which is "an internal combustion engine wherein the fuel is burned in a gaseous or vaporous condition." In the third place it must be a liquid hydrocarbon gas engine which is a gas engine "wherein the gaseous form of fuel is derived from a hydrocarbon liquid, such as petroleum, alcohol, etc." In the fourth place it must be a gas engine of the compression type which is "a gas engine using a compressed charge of gaseous fuel" and in which, consequently, the charge-containing space back of the piston will, at the time of ignition, "receive a larger amount of fuel in relation to its size than if the fuel was admitted thereto under mere atmospheric pressure."

Now, gas engines were old at the time of the application for this patent and had been used for various purposes. We shall have occasion to examine their use for propelling vehicles when we come to trace the development of the motor carriage itself. So liquid hydrocarbon engines were in use, both of the compression and non-compression types. The phrase in the claim, "a liquid hydrocarbon engine of the compression type," is descriptive of the Brayton engine, which came into use about 1873, and of the Otto compression engine which came into use a little later but still was in the antecedent art. The Brayton was undoubtedly the leading compression engine at the time of this application, but it was later superseded by the Otto.

These two engines—the Brayton and the Otto—play important parts in this case. We shall later have occasion to examine them at length and to compare them as belonging to two well-defined types of compression gas engines—the "constant pressure" type and the "constant volume" type. But it is unnecessary to describe them at this time or to define the terms which we have just employed. It is sufficient now to state the fact that engine element of the claim—considered as an engine and not necessarily as a part of a combination—was in existence at the date of the alleged invention.

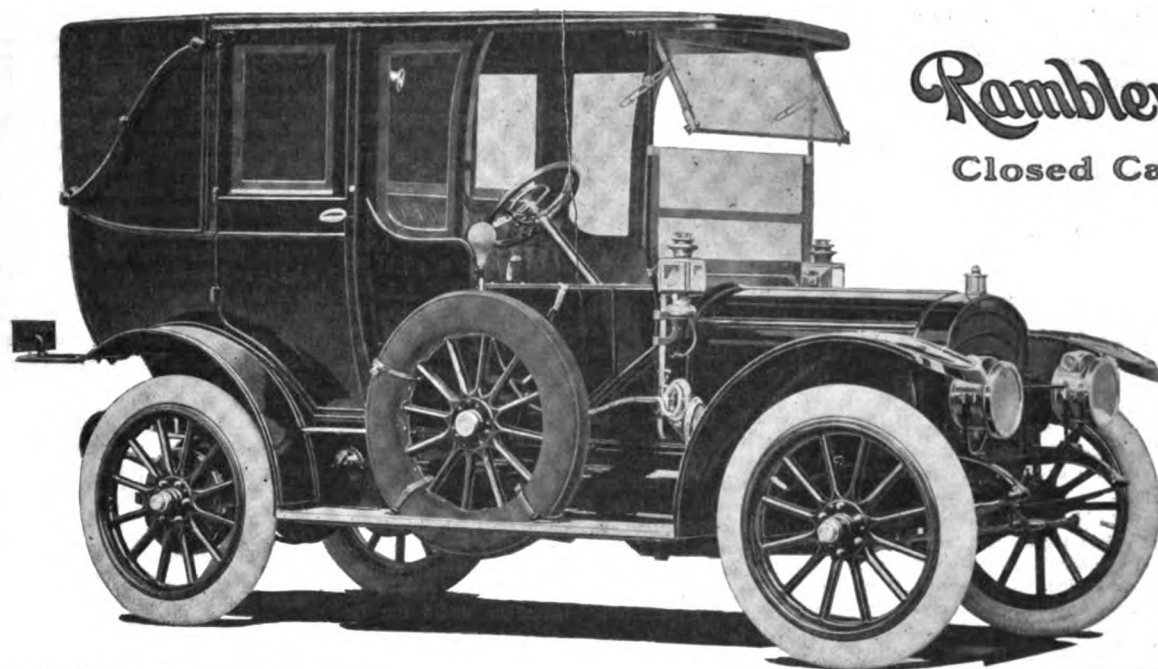
To recapitulate, we have examined the prior art and have found the different elements of the combination, other than the engine, admittedly old. We have also found the engine element old and represented by two types. We must now examine the art with reference to the combination itself and ascertain what, prior to 1879, had been the development of motor vehicles, particularly those for the carrying of passengers and goods.

For some years subsequent to 1830 steam carriages for common roads were used to a considerable extent in England for transporting goods and passengers. But the rapid development of the railroad locomotive as well as the opposition to the use of steam vehicles upon highways, soon drove them out of use, so that for many years before the application of this patent, steam engines had been used upon highways in this country and in England only for traction purposes.

Gas motor vehicles came later. As we have seen, gas engines were old in the art. The first suggestion of their use to propel road carriages was in 1860 in connection with the Lenoir engine. The Lenoir patent embraced the use of liquid hydrocarbon in the form of vapor and the engine was successful for stationary purposes. It was a non-compression engine. An illustration published in Paris in 1860 showed a vehicle propelled by this engine, and it was described in various publications. If such a motor vehicle were operated, it undoubtedly ran slowly, and the engine had great weight in proportion to power. But no reason is advanced why the Lenoir engine was not capable of propelling a vehicle.

The Mackenzie English patent of 1865 which the patent itself states was in the prior art was for the use of steam or "compressed air or other motive power instead of steam" for driving an omnibus or carriage. The structure of this patent included the use of a geared down chain and clutch.

The Saville French patent of 1867 described how the Lenoir engine could be applied to road vehicles. This patent referred to the difficulty of applying such engines to light carriages.



Rambler
Closed Cars

Rambler
Sixty-three
Town Car

WITH a closed car the charm of motoring may be enjoyed throughout the winter. Daily rides may be taken in comfort, regardless of the weather. Necessary errands become a pleasure. With storm curtains between the glass front and cab seats, protection is afforded all passengers. On pleasant days the top may be folded back. The Spare Wheel eliminates worry about tire trouble. It can be so easily and quickly changed, regardless of snow, water or ice. The thirty-six-inch wheels with $4\frac{1}{2}$ -inch tires; seven-eighths rear springs, with shock absorbers, produce gratifying comfort. The trimming is leather inside and out. Seating capacity seven. Flexibility provided by the offset crank shaft and straight-line drive, that permits operation in high gear no faster than a man usually walks, particularly adapts this car to town use.

Rambler closed cars are made in landaulet, limousine, town car and coupe styles. You may inspect them at Rambler branches and dealers stores in principal cities.

The Thomas B. Jeffery Company

Main Office and Factory, Kenosha, Wisconsin
Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco

New York Dealers: The Rambler Automobile Co.
of New York, 38-40 West 62nd Street, New York

The Kirkwood English patent of 1874 was for an engine "worked by the explosive force of a mixture of gas and atmospheric air" and which, among other uses, might "be incorporated in the structure of an ordinary tramway car or other vehicle."

The Rosenwald French patent of 1877 was for a carriage propelled by a non-compression gas engine. This vehicle had reducing gears and a clutch or "disentangler." The engine described was of the free piston type and was poorly adapted for use in a road locomotive.

Other patents are shown in the prior art—to Menn, Wilson, and others. But without examining them or further considering those which we have outlined, it is clear that if there were nothing more in the case, invention would not be shown in the mere combination of (1) a carriage, (2) a drive, and (3) a gas engine, or even a hydrocarbon gas engine. The elements were old and the combination neither novel as producing any new result nor as showing any new co-operative action.

It follows, then, that if we are to find invention and novelty in the broad combination of the patent, they must be in the use of a hydrocarbon gas engine of the compression type.

We have seen that hydrocarbon gas engines of the compression type were old in the art and were represented by the Brayton constant pressure engine and the Otto constant volume engine. The inquiry, then, is whether either of these engines were ever combined with the other elements for propulsion purposes before the application for this patent.

The testimony shows clearly that prior to 1878 Brayton had successfully applied his engine for propulsion purposes in boats. Several launches from twenty-five to thirty-five feet in length had been equipped with and operated by them. The evidence, including sketches, shows geared down transmission, the use of disconnecting clutches, and the presence of liquid fuel receptacles. Indeed if the claim be given the broad construction of covering the use of all compression gas engines, it might be read on the Brayton boat construction—if the words "motor boat" and "boat" were substituted for the "road locomotive" and "carriage." Still, we appreciate the substantial difference between the problem of propelling a boat and the motor vehicle problem and are not inclined to hold that this use constituted an anticipation, although it may properly be considered in determining the question of invention.

It also appears that about 1874 Brayton used one of his engines to propel a street car upon a trial track near the city of Providence. The car was propelled back and forth over the half-mile track and up a slight grade. Some passengers were carried. There were reversing and disconnecting devices. The engine was large and heavy in proportion to the power which it furnished and—an accident taking place—it was not long used. More power in proportion to weight was necessary for commercial street railway purposes and the plan of installing these engines was given up—financial considerations entering into this determination.

But although the experiments did not develop a commercial success, they were successful from a mechanical standpoint. The engine ran the car considerable distances and carried passengers. This use was not an abandoned experiment, but an abandoned attempt to induce the railway company to equip the cars with the Brayton engine. The perfected structure was capable of practical use although there was much room for improvement. It was not embryonic or inchoate. The combination of the engine, the drive and the carriage was used in public and therefore it required the use of the imitative, and not of the inventive faculties to claim, without modification, the same combination. The use of the engine in one vehicle pointed directly to its use in another vehicle.

The Brayton engine was also used upon an omnibus in 1878. The weight of the testimony is that the omnibus was run by the engine a very short distance but the experiment cannot be regarded as having been either mechanically or commercially successful. This use will not be considered as in the antecedent art.

In the state of the art thus disclosed, the patentee

filed his application for a patent. As we have seen, he claimed broadly the combination of a "liquid hydrocarbon gas engine of the compression type" with the other elements. It is true that in the specification and drawings he described and showed a particular type of engine, but he also said:

"Any form of liquid hydro-carbon engine of the compression type may be employed in my improved locomotive."

Taking the patent according to its terms the case apparently presented is the ordinary one in which a patentee claims a broad invention and describes what he considers to be the best mode of applying it, but is not confined to that method. And if the prior art permitted such a patent in this case it might be well that it would be valid. But the prior art did not permit such a patent. Every element in the claim was old and the combination itself was not new. Combinations of non-compression gas engines with the other elements had been in use and Brayton had employed a "liquid hydro-carbon engine of the compression type" in a vehicle.

Even if the Brayton uses were not precisely anticipatory we can reach no other conclusion than that with them in the prior art the claim in question must be held invalid for want of invention if it be given the broad construction the language apparently calls for. Moreover, if we give it a slightly narrower construction and treat it as covering the selection of the Brayton type of compression engine, the same conclusion must be reached. Invention would not be involved in the mere choice of that type of engine, for Brayton had previously made the same selection for his street car and boats. And even if the Brayton engine had been used only for stationary purposes it is by no means certain that its mere selection for incorporation in a motor vehicle without adaption would have involved invention.

In *re Faure's Appeal*, 52 Off. Gaz. 753 (Supreme Court, District of Columbia) is in point. In that case Faure claimed a patent for the combination of an electric motor with a vehicle. It appeared in that case, as in this, that boats had been propelled by the same kind of motor. The Court said (p. 756):

"It is made evident that the mechanical arrangements for applying the power are not new, being familiar to all experts; and that the result is not new, viz., the movement of vehicles by electrical storage batteries. It is admitted that Trouve had propelled boats in this way. The contention that such a use did not anticipate this application because that experiment was on water and this invention is designed for use on land seems untenable. The propulsion of vessels through water by such batteries is within the same principle as locomotion on land."

In *Shaw Electric Co. v. Worthington*, 77 Fed. 992, 993, the patent was for an improvement in traveling cranes through the substitution of independent electric motors for the power previously furnished by steam power. Judge Atcheson said:

"The facts, then, being as above stated, what element of invention is to be found in the patent here in suit? In view of the previous employment of electric motors in propelling street cars, driving machinery in mills, working elevators, etc., the mere application of electric motors to traveling cranes certainly did not involve invention, even had Shaw been the first to operate a crane electrically. The inventive faculty was no more exercised here than in a multitude of other instances in every branch of industry where the electric motor has been substituted for the steam engine or other source of power."

Indeed, Mr. Clerk, himself, says:

"I have already stated that if the Lenoir, Brayton, Otto, and Langen and Otto silent motors were all supposed to be in active existence and running, doing stationary work, that the mere selection of one of these motors without alteration and the application of any one of them without alteration of any kind, would not involve an act of invention."

It must be distinctly borne in mind that we are not now considering the alteration of any engine for the purposes stated in the patent; the question of the superiority of a combination embracing a modified or reorganized engine, or the invention involved in making it. We are, for the time being, taking the claim as it reads in connection with the broad statement in the specification and we conclude that, taken in that way, invention is not disclosed. It should also be observed that this conclusion is not inconsistent with a holding that the patent is valid upon its face. The antecedent art as shown by the testimony goes far beyond that disclosed by the patent or that of which the Court could take judicial notice.

But we are reluctant to so construe the claim that

it must be held invalid for want of invention. We are of the opinion that the patentee had ideas ahead of the times and appreciated many aspects of the problem to be solved in creating a practical motor vehicle. Reading his statement of the difficulties encountered, his manner of meeting them, and the advantages of his discovery, we think it evident that he understood that an engine suitable for a light vehicle could not be taken bodily from the prior art and used without change, but that modification and adaptation were required. In our opinion the statement in the patent that any form of compression engine may be employed is inconsistent with the intention disclosed by the patentee in the patent as a whole and should not have too much stress laid upon it. We also think that we should examine the specifications, including the drawings and the model, to determine whether the patentee in addition to expressing the need of adapting an engine to the purposes of a motor vehicle shows that he actually adapted one. It may well be that the claim as limited by the specification should be held to be valid.

As already shown, the patentee states at the commencement of his patent that the object of his "invention is the production of (1) a safe, (2) a simple and (3) cheap road locomotive (4) light in weight, (5) easy to control and (6) possessed of sufficient power to overcome any ordinary inclination."

He then, as shown in the extract from his patent quoted at the beginning of this opinion, points out the difficulties involved in the use of steam engines upon common roads and states that he had overcome them by his road locomotive propelled by his liquid hydrocarbon engine of the compression type.

He next states that the advantages of his invention are:

(1) Dispensing with steam boilers, coal and water and the structures necessary to their use, and employing a condensed form of fuel, thereby reducing the weight of the machine in proportion to the power produced,

(2) Producing a power road wagon light in weight; capable of being managed by persons of ordinary skill, and having sufficient power for ordinary purposes.

The patentee also describes with reference to the drawings the body of the road locomotive, the driving wheels, the clutches, the gearing, the springs, the fifth wheel, the steering device, the brake and other parts of the structure and also indicates the preferable locations of various devices and preferable methods of connection.

The patentee describes with reference to the drawings the engine element, pointing out (1) the air reservoir, (2) the air pump, (3) the working cylinder, (4) the inlet valve, (5) the cam shaft (6) the combustion chamber, and other details. He also briefly describes the operation of some of the different parts. The description, however, both of the construction and operation of the engine is quite incomplete. This was appreciated by the patentee, for he concluded his description by saying:

"As the general construction and mode of operation of liquid hydro-carbon engines of this class are well known, it is considered unnecessary to further describe them here."

As the patentee thus refers to the existing art for a more complete description of his compression engine and as we have ascertained that there were two different types of compression engines in the art represented respectively by the Brayton and Otto engines, we must now find what those types were in order to determine which the patentee selected.

The two types are called respectively the constant pressure type and the constant volume type. Although these terms may have originated since the date of the invention, they correctly describe the types or classes of compression engines then in existence. No better explanations of them can be found than in Mr. Clerk's work entitled "The Gas Engine," which was published in 1887 and which has been offered in evidence. In this book he also shows the construction and working processes of the two types of engines and the differences between them, as stated in the foot-note.*

(In his book (p. 29) Mr. Clerk divides his gas engines according to their working processes into three well defined types:

"1. Engines lighting at constant volume, with previous compression."

"2. Engines igniting at constant pressure with previous compression."
 "3. Engines igniting at constant volume, with previous compression."

It is not necessary for the purposes of this case to examine the operation of the first type, the non-compression engine. With respect to the second type—the constant pressure compression engine, Mr. Clerk says (p. 31):

"In it the engine is provided with two cylinders of unequal capacity; the smaller serves as a pump for receiving the charge and compressing it, the larger is the motor cylinder, in which the charge is expanded during ignition and subsequent to it.

The pump piston, in moving forward, takes in the charge at atmospheric pressure, in returning compresses it into an intermediate receiver, from which it passes into the motor cylinder in a compressed state. A contrivance similar to the wire gauze in the Davy lamp commands the passage between the receiver and the cylinder, and permits the mixture to be ignited on the cylinder side as it flows in without the flame passing back into the receiver.

The motor cylinder thus receives its working fluid in the state of flame, at a pressure equal to but never greater than, the pressure of compression. At the proper time, the valve between the motor and the receiver is shut, and the piston expands the ignited gases till it reaches the end of its stroke, when the exhaust valve is opened, and the return expels the burned gases.

The ignition here does not increase the pressure, but increases the volume. The pump, say, puts one volume or cubic foot into the receiver; the flame causes it to expand while entering the cylinder to two cubic feet. It does the work of two cubic feet in the motor cylinder, there is nevertheless an excess of power over that spent in compressing."

With respect to the constant volume compression engine Mr. Clerk says (p. 33):

"The compression cylinder may be supposed to take in the charge of gas and air at atmospheric temperature and pressure; compress it into a receiver from which the motor cylinder is supplied; the motor piston to take in its charge from the reservoir in a compressed state; and then communication to be cut off and the compressed charge ignited.

Here ignition is supposed to occur at constant volume, that is, the whole volume of mixture is first introduced and then fired; the pressure therefore increases. The power is obtained by igniting while the volume remains stationary and the pressure increases.

Under the pressure so produced, the piston completes its stroke, and upon the return stroke the products of the combustion are expelled."

It is apparent from the description in this work that a constant pressure engine is one in which the cylinder pressure remains the same during the outward travel of the piston while the volume of flame increases. The pressure is applied continuously and not spasmodically. This mode of operation is also called "slow combustion" and "non-explosion."

A constant volume engine operates in a different manner from a constant pressure engine. The volume during ignition theoretically remains constant; the pressure increases. The action is spasmodic. The piston moves by explosive action and is kept in motion by a series of explosions.

The Brayton engine, to which we have referred, was a constant pressure compression engine. Mr. Clerk says in his book (p. 32) that it was one of the most successful of that kind and also said (p. 154):

"The engine worked well and smoothly; the action of the flame in the cylinder could not be distinguished from that of steam; it was as much within control and produced diagrams quite similar to steam."

And in Prof. Thurston's contemporaneous report (1873) concerning the Brayton engine, quoted in Mr. Clerk's book (p. 157), it is said:

"The operation of the engine is precisely similar in the action of the engine proper and in the distribution of pressure in its cylinder to that of the steam engine. The action of the impelling fluid is not explosive, as it is in every other form of gas engine of which I have knowledge."

The Otto engine, on the other hand, was a constant volume compression engine. Although the leading idea of compression and ignition at constant volume had been suggested before the time of this engine, Otto seems to have successfully applied it and his engine came into general use. This engine was operated by a series of timed explosions and, as we shall later see, was the prototype of the modern automobile engine.

It is clear from this examination that the statement heretofore made that the Brayton and Otto engines differed in being respectively constant pressure and constant volume engines is sustained by the record. We shall continue the examination of the differences between these engines when we consider the question of infringement. They also differed in another important particular. The Brayton was a two cycle engine. The Otto was a four cycle engine.

Turning to the complainants' definitions we ascertain that "a cycle is a series of movements composing one complete operation," and that the following is a definition of the term "two cycle engine":

"An engine whose operation is completed by two strokes, viz: a power stroke and a scavenging or exhaust stroke. If of the compression type the power stroke simultaneously compresses the charge for the next power stroke, the charge thus compressed being admitted to the cylinder at the end of or during the scavenging or exhaust stroke."

The term "four cycle engine" is thus defined:

"An engine whose operation is completed in four strokes. Always of the compression type. First stroke sucks in the gaseous charge at atmospheric pressure; second stroke compresses the charge; third stroke is the power stroke; fourth is the scavenging or exhaust stroke."

The compression stroke in the two cycle engine of the earlier art usually compressed the charge into an intermediate receiver from which it was admitted in a compressed state to the cylinder. This was the construction of the Brayton engines which were provided with outside mechanism, in which compression took place before the charge was let into the cylinder. The four cycle engine, on the other hand, as represented by the Otto engine, had no such intermediate receiver. The single cylinder served alternately the purposes of motor and pump and the charge was also compressed in it.

Now as the patentee in effect referred to an existing compression engine to supply the deficiencies in his description and as the two existing types are represented by the Brayton and Otto engines respectively, the question is—which one did he refer to?

Comparing the engine drawings of the patent in suit with the Brayton patent drawings, we think it evident that the patentee adopted and, perhaps, adapted the Brayton apparatus. Looking at the written specification it will be seen that an external air reservoir and pump are provided, showing that the engine was of the Brayton two cycle type. Reading further we observe that the patentee says:

"As it would be decidedly inconvenient to be under the necessity of extinguishing the flame in my improved traction engine whenever it was required to make a short stop the clutch Y (or the clutches j j') is interposed between the engine and the driving wheels, so as to admit of the running of the engine while the carriage remains stationary."

This constantly burning flame (or other continuous ignition) was necessary to the operation of the Brayton constant pressure engine. It was the "living torch at the entrance of the cylinder" referred to in the Brayton patent. Its existence was not essential to the timed explosion operation of the Otto engine.

So without any expert opinion we should have no difficulty in determining that the engine of the patent is of the Brayton two-cylinder constant pressure type. And the testimony even of the complainants' expert is to the same effect. Mr. Clerk said in his testimony that the reference in the patent to existing well known engines was to the Brayton constant pressure engine.

He also said in his report to complainants' counsel, after referring to the description in the patent:

"Stopping at this point it is necessary to recognize what type of engine is indicated. About this I have no difficulty whatever. I at once recognize it as an engine of the Brayton type operating on the constant pressure cycle. Although no description is given in the specifications any one familiar with Brayton engines can see the air pump of smaller capacity than the motor cylinder, the air reservoir containing air compressed by the pump and the inlet valve admitting air to the cylinder. . . . Altogether I have no difficulty in seeing that the intention of the inventor is to operate by the constant pressure method, although he does not say so specifically."

It cannot, therefore, be questioned that the engine which the patentee referred to in the patent for the completion of his description was the Brayton engine. The Brayton mode of operation was adopted by reference as the Selden mode of operation and this method, as we have already seen, was the constant pressure, two-cycle method.

The next question is, what modifications does the patent show that Selden made in the Brayton engine?

The Brayton patents and the testimony concerning the actual Brayton engines show that they were heavy and cumbersome in proportion to the power furnished. While such an engine did run a street car, it occupied considerable space, and a still larger and heavier engine would have been necessary to furnish sufficient power for the practical needs of the railway. The engines were poorly adapted for use in a

vehicle upon common roads. When capable of furnishing sufficient power they were too heavy and the reciprocating parts occupied too much space.

The written description of the patent, read in connection with the drawings, shows fairly that Selden made material improvements upon the Brayton structure in order to adapt it to the purposes of a road vehicle.

(1) The drawings show that the Selden engine has an enclosed crank chamber, it being a continuation of the working chamber. It is true that the only function of the enclosed crank case mentioned in the written specification is that of a cooling chamber. But it is referred to and it is clearly shown in the drawings so that we think the patentee entitled to claim as a feature of his patent any benefits necessarily accruing from its use. We are also satisfied that the use of the enclosed crank case rendered unnecessary the heavy bed plates of the former Brayton constructions and enabled the patentee to dispense with other heavy and cumbersome parts outside the casing of the cylinder.

(2) We also think it is the better view that Selden by his alterations increased the speed capabilities of the Brayton engine. Higher speed was obviously necessary for the purposes of a light road vehicle, and it was such a vehicle that it was the object of the patent to produce. The elimination of cumbersome working parts by the use of an enclosed crank case necessarily increased, to some extent, the capacity for speed. The plurality of cylinders referred to, but not required by, the specification and shown in the drawings produced, in the arrangement shown, continuous turning power and increased the speed possibilities over the old Brayton construction. The gearing ratio—the proportion of stroke to volume of cylinder—shown in the drawings, but not mentioned in the written specifications, also gave increased speed.

The improvements, then, which Selden made in the Brayton engine had these results:

(a) Decrease in weight in proportion to power produced;

(b) Decrease in bulk in proportion to power produced;

(c) Increase in speed.

To make these improvements we think that something more than mere mechanical skill was required and, in view of the superior efficiency of the engine for the purpose for which it was designed, we hold that invention was involved. The complainants are probably right in saying in their brief:

"He (Selden) was compelled to materially reorganize the Brayton engines of the prior art even to such an extent that a separate engine patent would have been fully justified by the degree of invention involved."

[The rule is, of course, appreciated that while the drawings of a patent serve to make plain doubtful or ambiguous statements in the written description, they cannot go further and supply the entire absence of the written description required by the statute. A strict application of this rule would probably prevent us from considering what the drawings show concerning the gearing ratio or the working of the cylinders—those subjects not being mentioned in the description. But in view of the stated objects of the patent and in view of the fact that changes in the Brayton structure referred to in the description tend to increase speed capabilities, we have thought that the rule should not be strictly applied in this case and that some weight should be given to what the drawings disclose in that direction, as supplementing the written description and not altogether as supplying its absence.]

Selden did not, however, obtain a patent for his improvement upon the Brayton engine, but made the improved engine an element in his road locomotive combination. But no new co-ordinate action of the members of the combination is shown. The improved engine furnished the power and the other elements co-operated with it in the same way that similar elements had co-operated with the older engines. The superior results would seem to have arisen from the superiority of the engine element alone. But it is not necessary to determine whether the associated action, as such, produced a new and useful result. It is sufficient to sustain the claim to hold that the combination embraced a novel element. The claim is held to be valid as covering a combination in a road locomotive of the different elements with a liquid hydrocarbon compression engine of the Brayton type; the limitation to this type being read into the claim by the specification to save it from invalidity.

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It must be understood, however, that we do not sustain the claim upon the theory that Selden invented a light engine, an engine of small bulk or an engine of high speed, using those terms absolutely. We have made comparisons with, and have considered improvements upon, the Brayton engines only. Compared with them we think the Selden engine lighter, less bulky and of higher speed. But we are not at all convinced that the Selden engine operating according to the Brayton or constant pressure method would be a high speed engine as compared with one operating according to the explosive method. Constant pressure involving slow combustion seems consequently to involve slow operation.

The complainants urge that it places too narrow a construction upon the claim to limit it to a combination of which the engine element is an improved Brayton engine. They say that the improvements upon the Brayton engine which Selden shows in his patent merely illustrate the alterations and changes required by compression engines generally to fit them for the purposes of a light road vehicle. They say, in effect, that the engine element of the claim is any compression engine which has been adapted to vehicular purposes by changes similar to those made in the Brayton engine.

But we have been able to find that Selden reorganized the Brayton engine only by making close comparisons with that particular construction. We have nearly broken established rules by looking at the drawings themselves to ascertain the changes made in that engine. There is little enough to be found about the improvements in it and nothing at all about the alterations of other engines. The patent does not pretend or attempt to lay down any rule for reorganizing compression engines to fit them for vehicular purposes. It does not say that other kinds of engines than the Brayton type require changes. It does not say that the changes made in the Brayton engine could be made in other engines or that, if made, they would fit them for use in motor vehicles. No one could learn from the patent whether the Otto engine could be constructed with an enclosed crank chamber or whether the substitution of the gearing ratio shown in the drawing would increase or diminish its speed. With the patent before a person skilled in the art, experiments, certainly, and invention, not improbably, would have been necessary to determine the steps required to reorganize the Otto engine.

A patent is granted for solving a problem, not for stating one. Its description must explain the invention itself, the manner of making it and the mode of putting it in practice. In the absence of knowledge upon these points the invention is not available to the public without further experiments and further exercise of inventive skill. A claim for a combination which embraces an element only in case it is made capable of being employed in the combination and without disclosing means of adapting it discloses nothing definite. The questions remain, What engine is capable of being combined in a road vehicle? What changes are necessary to adapt it to the purpose? How are these changes to be made? If we were to construe the claim as the complainants urge, we should be obliged to go further and hold it uncertain, indefinite, and, consequently, invalid.*

[*Any force whatever in the complainants' contention must grow out of the presence in the patent of the statement to which attention has already been directed, that "any form" of compression engine may be employed. But just as we found that by giving those words their natural meaning the patent would be made so broad and sweeping as to be invalid in view of the antecedent art, so if we construe them as meaning "any adaptable engine" or "any engine which has been adapted" we make the patent indefinite and invalid. If the patent is to be sustained the language in question must be given a limited application. Under all the conditions we think that it should be construed as meaning merely that the patentee does not confine himself to any particular form of detail of the Brayton type of engine.]

For these reasons we must hold that the claim of the patent, limited by the specification in the manner shown, is valid, unless, indeed, we are satisfied that the patented structure was inoperative and without utility. But, without discussion, it is sufficient to say that we have no doubt that an engine constructed according to the teachings of the patent with its references to the Brayton engine would, in combination with the other elements, run a road vehicle. We think that the patent discloses an operative structure

and that is sufficient. The defense of want of utility is not sustained. But any contention that a motor vehicle constructed by the patentee according to the teachings of the patent operated so successfully as to demonstrate that Selden had solved a great problem and is entitled to the status of a pioneer inventor, is, we think, without foundation.*

[*While the testimony with respect to the Selden vehicles constructed to illustrate the patent is sufficient to negative inoperativeness, it fails to show such practical success as to broaden the scope of invention, and certainly does not disclose invention in and of itself. We should be unable to sustain the patent upon any such theory as that advanced by the complainants' experts that Selden's invention consisted in producing "a successfully operative vehicle" or "as a new result," a "practically unobstructed vehicle capable of great range of action." Of course, the vehicle had to be successfully operative in the sense of showing utility to make the patent valid, but that result did not show invention and novelty. Those essentials we were able to find only elsewhere. Moreover the result of obtaining a practically unobstructed vehicle arose from the location of the engine upon the axle which the defendants have not adopted, and that feature is not put forward in the complainants' briefs as being essential to the invention. And, furthermore, we are not at all convinced by the testimony concerning the vehicles in question—even assuming that their construction followed the teachings of the patent and nothing besides—that they showed capability for commercial use or possessed great range of action.]

We come now to the question of infringement and as it is conceded that the defendants use a combination embracing all the elements of the claim other than the engine element, and as it is also conceded that they use an engine of some kind in connection with such other elements, the question of infringement resolves itself into the inquiry whether their engine is a modified Brayton engine or its equivalent.*

[*A distinction is made by the Judge of the Circuit Court in considering the question of infringement, which we think is not well founded. He says in his opinion:

"Defendants seem continually to assume (without saying so) that Selden invented nothing more than a modified Brayton engine and then assert that they do not infringe because they do not use that particular motor and do use a modified Otto. They admit that the claim is for a combination, but continually seek refuge in defenses that would be good against any patent on Selden's engine but are worthless against the combination, if it be patentable at all."

Undoubtedly a patent upon a combination may be broader than a patent upon any or all of its elements. The members may co-operate to produce a new and beneficial result or operate according to a novel method. But it is not clear that any novel co-operative action is shown in the present case and whatever new and beneficial result was produced by the combination seems clearly to have arisen from the superiority of the engine element alone. It has seemed well settled in the case that which the patentee invented and used in his combination was a modified Brayton engine. There would have been no invention in combining an unmodified Brayton engine with the other elements.

But all this is beside the question of infringement. Even if it be conceded that the combination patent has a different scope than a patent for an improved Brayton engine would have had, it is none the less true that if the defendants do not use the modified Brayton engine and do use the modified Otto engine, they escape infringement unless the latter is an equivalent of the former. It is well settled that to establish the infringement of a combination, the use of every element of the combination must be shown.]

But before we enter directly upon this inquiry we should briefly examine the development of the modern automobile and ascertain from what source the engine of the defendants' type were obtained, and especially, whether they were borrowed from Brayton and Selden.

We have already noticed the motor vehicles of the art prior to 1879. Much had been attempted and little accomplished. Indeed it was not until about ten years later, at the time of the Paris exposition of 1889, that the real automobile art may be said to have begun. At that exposition a Benz automobile was exhibited and, later, the public interest was stirred by the Paris-Rouen race. In this country public attention was first called to the automobile by the Daimler exhibit at the Columbian Exhibition in Chicago in 1893, and in 1895 the Times-Herald automobile race took place in Chicago. The pioneer inventors appear to have been Daimler and Benz abroad and Duryea, Olds and Ford (and perhaps one or two others) in this country.

The inventors selected for their automobiles the Otto compression engine. They did not select the Brayton engine and, indeed, as Mr. Clerk says, the Brayton engine had practically disappeared from the

market in 1889. Thus in their original type of engine they borrowed nothing from Brayton, and, of course, they could have actually borrowed nothing from Selden because his patent was not issued until 1895.

In some of the first automobiles the engine was located on the axle as shown in the Selden patent. But this location below the springs caused too much jar to the machinery and was soon abandoned.

The Otto compression engine selected by these inventors has been modified and changed in its development into the modern automobile engine and adjuncts of importance have been added. But none of these changes was in fact taught by the patent in suit nor could many of them have been taught by it had it been issued. And the possible changes which it did indicate were suggestive merely.

The Otto compression engine did not at first employ electric ignition. A flame with a moving slide produced the timed explosions. Electric ignition was considered impracticable. But when the electric art had developed it was seen that the electric ignition could be made superior to flame ignition and would permit much higher speed. But the change was not indicated by the Selden patent which refers only to flame ignition.

The inventors added a carburetter to the Otto engine in which the charge of gasoline and air was mixed in exact proportions before it was conducted to the cylinder for compression. In the engine of the patent the air vaporizes the gasoline in the passage leading to the cylinder and the proportions necessarily vary. The patent in no way pointed in the direction of the carburetter.

When the inventors began to adapt the Otto engine to the purposes of a road engine the desirability of lightness was apparent and changes were made in the bed and castings so that the engine could be supported upon a steel frame instead of upon the heavy foundations used in stationary work. Other changes in the direction of decreasing weight and bulk and increasing speed were made. But these inventors were actually taught nothing in these matters by the Selden patent and if it had been before them they would, as we have seen, have learned nothing definite from it.

We thus find that the defendants use an improved Otto engine which retains the principle of that type and is, in its essentials, a four cycle constant volume (or explosion) compression gas engine. Obviously it is not identical with Selden's improved Brayton engine which is a two cycle constant pressure (or slow combustion) compression gas engine; and so the final question is whether they are, under the patent, equivalents.

It is, of course, clear that an inventor is not limited to the particular structure illustrated in his patent as the best form known to him provided his claim is broad enough to cover other or equivalent forms. If the claim in the present case could have been sustained as covering a combination of any hydrocarbon gas engine of the compression type with the other elements, the description in the specifications of the modified Brayton engine would have been considered as a statement of the inventor's idea of the best form, but he would not have been confined to it, and the Otto improved engine would unquestionably have infringed. But we were unable to sustain the claim as so construed and could only hold it valid as being limited to a combination in which a Brayton modified or reorganized engine should be a member. The patent as so construed necessarily permits only a very limited range of equivalent forms. Being confined to an engine element of a particular class or type, an engine of another class seems almost barred by the interpretation itself. Still, classification might be based upon matters of form and not of substance. The elements of the combination are things and not names. In this as in other patents for combinations we think that the unity of the combination will not be affected by the substitution of elements which, however they may be classified or designated, perform the same function in substantially the same way, while it will be destroyed by the substitution of elements which do not perform the same office in substantially the same manner.

We must, then, consider the materiality of the differences between the engines in question. We have already seen that broad differences exist and must

now determine their nature and extent. In giving weight to dissimilarities—saying what are substantial and what relates merely to form—we must consider the degree of invention shown in the patent, although we will be unable to disregard differences as in the case of a patent of a primary character. And we think this means in the present case that the patent is entitled to a fair and reasonable but not broad range of equivalents. What is a fair and reasonable range can better be determined in the concrete comparison rather than in the abstract definition.

A close comparison of the engines shows many differences. Some are obviously mere differences in shapes and designs and may be at once disregarded. The following are those which appear to be the most material:

(1) The Selden engine has external compression mechanism with a compressed air reservoir, while the defendants' engine has no such external mechanism, but compacts the charge in the working cylinder. Were the compression of the charge the only object to be accomplished, undoubtedly the gas and air could as well be compressed to the requisite degree before entering the cylinder as by compression in the cylinder itself. And even if internal compression gave superior results it is probable that the one method would be the equivalent of the other. But if and in so far as outside compression is essential to a constant pressure engine, inside compression cannot be regarded as its equivalent unless we determine that the distinction between constant pressure and constant volume engines should be disregarded.

(2) The Selden is a two cycle engine. The defendants' engines are four cycle. The Selden engine compresses into an outside chamber simultaneously with its power stroke and with the next stroke drives out the burnt gases. Every second stroke is a power stroke. The defendants' engine draws in the charge with the first stroke and compresses with the second. The third stroke is the power stroke and the fourth sweeps out the burnt gases. Every fourth stroke is a power stroke. But the first two strokes of the defendants' engines are merely pumping and compressing strokes and were the question here between a two cycle explosion engine and a four cycle explosion engine, we should have little difficulty in finding the one the equivalent of the other.

(3) The Selden engine burns the charge as mixed at the entrance to the cylinder, while the defendants' engine compresses and mixes the charge inside the cylinder. The result in the latter case is that by the compression in the cylinder after admission the mixture is brought into homogeneous state, while in the former case the gas and the air burn at the inlet to the cylinder in a more or less non-homogeneous state with pressure behind them. The materiality of this difference in operation, however, lies in the fact that the one form is that of the constant volume engine; the other, of the constant pressure engine.

(4) The Selden engine has no distinctive external vaporizing device while, as we have seen, the defendants' engine is equipped with a carburettor which determines the proportions of the mixtures to be admitted to the cylinder and also increases its homogeneity. But by the construction shown in the patent the air vaporizes the hydro-carbon in the passage leading to the cylinder and we think the carburettor, while undoubtedly an adjunct of great importance and advantage, should be held not beyond the range of equivalents.

(5) The Selden engine has constant flame ignition, while the defendants' engine has timed electric ignition. Probably continuous electric ignition would be the equivalent of constant flame ignition, but whether intermittent or timed ignition, which is an essential feature of the constant volume engine, it the equivalent of continuous ignition depends altogether upon whether the constant volume engine is the equivalent of the constant pressure engine.

So, lastly, we reach the question: Is the constant volume engine the equivalent of the constant pressure engine, under a patent, entitled to a fair and reasonable but not broad, range of equivalents?

This is not a question of difference in terminologies or theories. It is a question of differences in principles and things. It is wholly immaterial whether the terms "constant pressure" and "constant volume"

were in use when the patent was first applied for, or when or by whom they were first employed. It is equally immaterial whether we use these terms at all. We might just as well use the terms "explosion" and "non-combustion" to designate the two types, and, indeed, have repeatedly used them in this opinion. But the terms "constant pressure" and "constant volume" are convenient phrases which in themselves indicate methods of operation and they are used in Mr. Clerk's book to which we have referred and shall refer. So, although laying no stress whatever upon the mere names, we shall continue to use them.

It is also immaterial that by omitting the by-pass which furnishes a constant supply of gas; by changing the timing of valves and by using timed ignition, a constant pressure engine might be converted into a constant volume engine. The required alterations are by no means trivial and the actuality of difference in principles and methods is not changed by the readiness by which they may be eliminated.

There is another matter which is also without importance. It is immaterial that a constant volume engine, under extraordinary conditions and with unusual adjustments, may be made to approximate the action of a constant pressure engine or that a constant pressure engine under like conditions and adjustments may be made to approximate the action of a constant volume engine. The question is whether in their regular methods of operation the two types of engine are so similar as to be substantial equivalents.

Turning again—with the risk of repetition—to Mr. Clerk's book, we find that in addition to his classification of compression engines as shown in the extract already quoted, he says, in speaking of the constant pressure type (p. 152):

"In engines of this kind compression is used previous to ignition, but the ignition is so arranged that the pressure in the motor cylinder does not become greater than that in the compressing pump. The power is generated by increasing volume at a constant pressure. Engines of type II (constant pressure engines) are therefore:

"Engines using a mixture of inflammable gas and air compressed before ignition and ignited in such a manner that the pressure does not increase, the power being generated by increasing volume.

"These engines are truly slow combustion engines; in them there is no explosion.

"The most successful engine of this kind is an American invention; although proposed in 1860 by the late Sir William Siemens, it was never put into practicable working shape till 1873 when the American, Brayton, of Philadelphia, produced his well-known machine."

And of his type III or constant volume type, Mr. Clerk further says (p. 163):

"Engines of this kind resemble those just discussed in the use of compression previous to ignition, but different from them in igniting at constant volume instead of constant pressure; that is, the whole volume of mixture used for one stroke is ignited in a mass instead of in successive portions.

"The whole body of mixture to be used is introduced before any portion of it is ignited; in the previous type (constant pressure type) the mixture is ignited as it enters the cylinder, no mixture being allowed to enter except as flame. In type III the ignition occurs while the volume is constant; the pressure therefore rises; it is an explosion engine, in fact, like the first type (non-compression), but with a more intense explosion, due to the use of mixture at a pressure exceeding atmosphere."

"In the third type are included all engines having the following characteristics, however widely the mechanical cycle may vary:

"Engines using a gaseous explosive mixture, compressed before ignition and ignited in a body, so that the pressure increases while the volume remains constant. The power is obtained by expansion after the increase of pressure."

Mr. Clerk considered these differences between constant pressure and constant volume so important that he made them the basis of classification in his book and notwithstanding his present testimony we must regard them as substantial."

"Mr. Clerk uses the word 'type' in his book in the sense of 'kind' or 'class.' Thus he points out several different varieties of the different classes of engines. As we have quoted freely from the book we have, to avoid confusion, used the same word in the same sense."

It is true, as stated in the opinion of the Judge at Circuit, that in all internal combustion engines the result of expanding, in any way the gaseous fuel is the driving of the piston, but the method of operation is not the same when it is driven by explosive action as when it is driven by slow expansion. So in all compression gas engines the charge is compressed before ignition, but the compression of the whole charge and its instantaneous firing at the

moment of greatest compaction is a very different thing from the ignition of successive compressed portions—particle after particle—as they enter the cylinder. In the latter case the force upon the piston is progressive—"the action of the flame in the cylinder could not be distinguished from that of steam" (Mr. Clerk's book, p. 154)—while in the former, the force is spasmodic and explosive. These are differences in principles and methods of operation. And these differences in principles and methods are substantial. We are satisfied that the slow combustion method necessarily involves slow operation; not only because of the time required for combustion between strokes, but on account of the comparatively non-homogeneous character of the mixture. We are also satisfied that it gives less power in proportion to the size of the engine than the explosion method.*

*Explosive action was the very thing which Brayton, who invented the engine which Selden modified, desired to avoid. In his foundation patent of 1872 in speaking of the long slow-burning operation of the combustible, he says:

"While in the state of expansion consequent upon ignition it (the flame) exerts, not a spasmodic or explosive force upon the piston at the very commencement of its stroke when the expanding gas begins to act upon it, and the quantity of gaseous mixture during its period of admission is in proportion to the extent of the movement of the piston and is put into the state of expansion upon passing the intercepters."

The statement concerning Brayton in "Engineering" for February, 1877, seems well founded:

"He turned his attention to the design of an engine in which an explosive mixture could be gradually consumed without the ordinary explosive action."


It is our opinion, for these reasons, that in this road locomotive combination embracing as its engine element an engine of the constant pressure type, the substitution in place of such engine of an engine of the constant volume type destroys the unity of the combination, because the two engines do not perform the same functions in substantially the same way. Granting the patent as broad a range of equivalents as its interpretation will permit, and giving due consideration to the degree of invention involved, still we are not able to hold that the Otto improved engine is the equivalent of the Selden engine or that the defendants infringe by employing it as an element of their motor vehicle combination.

Let us briefly notice the consequences of an opposite conclusion. The Otto engine was in the prior art. Assuming that it was not adapted for propulsion purposes in a light vehicle, it would seem clear that the first person who showed invention in re-organizing and adapting it would have been entitled to a patent for the improvement, and with Otto's permission, could have used the improved engine in a vehicle. Similarly it would seem that he might have obtained a patent for a combination embracing the improved Otto engine as an element. But these things could not have been done if infringement is shown in this case. Selden, although electing the Brayton engine which was then designed to avoid the explosive type, yet preempted the field and prevented all improvements for propulsion purposes in that type.

While the conclusion of non-infringement which we have reached leaves the patentee empty handed with respect to his patent for the short time it has to run, it cannot be regarded as depriving him through any technicality of the just reward of his labors. He undoubtedly appreciated the possibilities of the motor vehicle at a time when his ideas were regarded as chimerical. Had he been able to see far enough he might have taken out a patent as far-reaching as the Circuit Court held this one was. But like many another inventor, while he had a conception of the object to be accomplished, he went in the wrong direction. The Brayton engine was the leading engine at the time and his attention was naturally drawn to its supposed advantages. He chose that type. In the light of events we can see that had he appreciated the superiority of the Otto engine and adapted that type for his combination his patent would cover the modern automobile. He did not do so. He made the wrong choice and we cannot, by placing any forced construction upon the patent or by straining the doctrine of equivalents make another choice for him at the expense of these defendants who neither legally nor morally owe him anything.

The decrees of the Circuit Court are reversed with costs and the causes remanded with instructions to dismiss the bills with costs.

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972,322. Armor for Automobile Wheels. Vendel Laszello Bekefi, Cleveland, Ohio. Filed Feb. 19, 1910. Serial No. 544,909.

An armor for pneumatic wheel tires consisting of a multiplicity of members operatively overlapping at their ends and each member constructed of inner and outer parts separably united, both said parts segmentally shaped in cross section and each part projecting at one end beyond the end of the other part corresponding therewith, said inner member provided with projections at its sides having holes through which fastening means for holding said parts on a wheel are adapted to be connected.

972,385. Power Transmission Mechanism. Karl A. Kendrick, Detroit, Mich., assignor of one-half to Harrison Geer, Detroit, Mich. Filed Nov. 4, 1909. Serial No. 526,164.

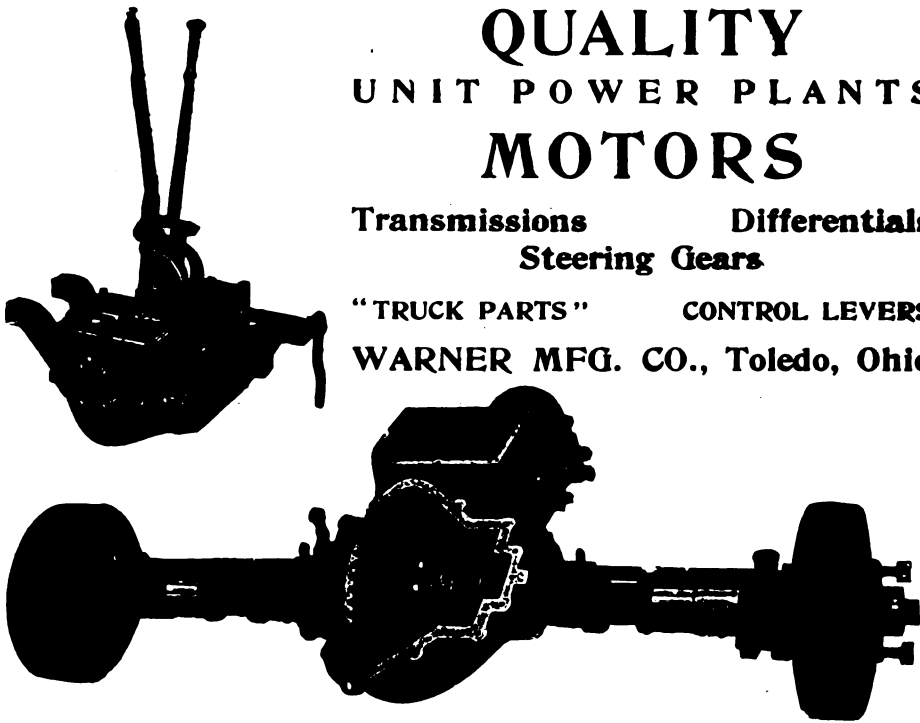
1. Power transmitting mechanism for motor vehicles comprising two independent motors, two traction wheels, means for transmitting the power from each of said motors independently to one of said wheels, a single lever connected to and controlling both of said power transmitting devices of said motors, and means for disconnecting said transmitting devices from their motors, respectively.

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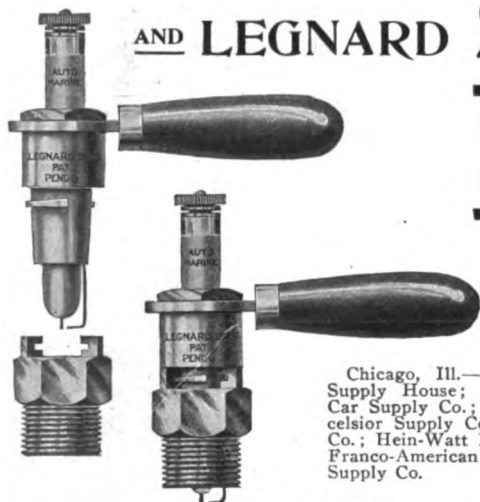
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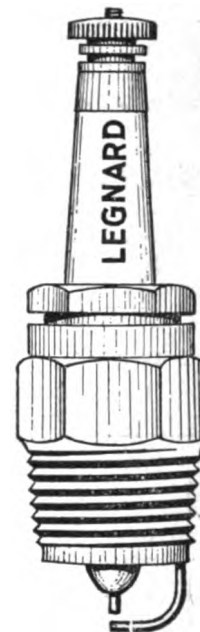
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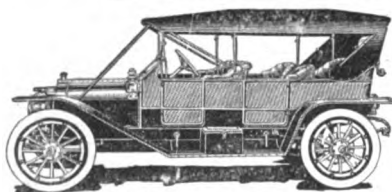
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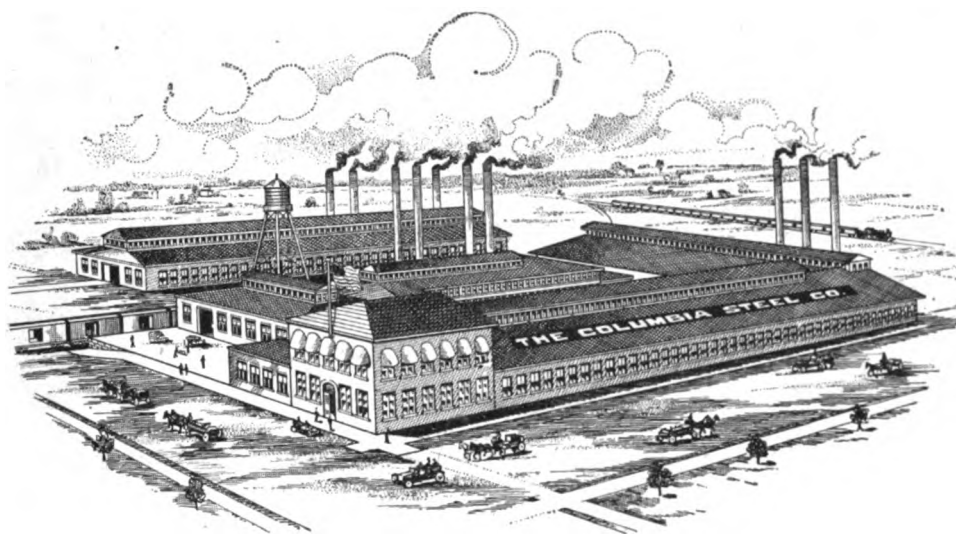
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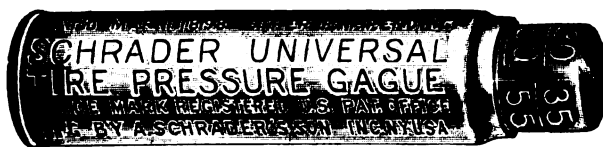
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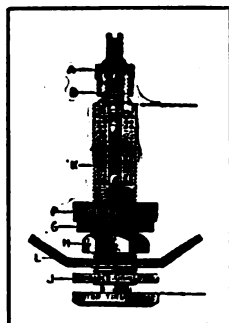
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The 63 Braided Wires

Goodyear tires are made to fit any rim. We picture this rim because it is almost universal on new model cars.

Note that the rim flanges—which are removable—are placed to hook outward with No-Rim-Cut tires. The tire comes against the rounded edge, making rim-cutting impossible under any condition.



This picture shows how ordinary tires—clinchers—fit this same rim. The rim flanges here must be placed to hook inward—to grasp hold of the hooks on the tire. These hooks are essential to hold common tires to the rim.

Note how the tire casing, when deflated, comes against the sharp hook of rim flange. That is what causes rim-cutting. A punctured tire is often wrecked in a moment.

No Hooks Needed

Goodyear No-Rim-Cut tires have no hooks on the base, for these tires don't need to be hooked to the rim. The reason lies in 126 braided piano wires vulcanized into the base of the tire. That makes the base unstretchable. Nothing can force the tire off the rim until you remove the flange. It is so secure that no tire bolts are needed—none are used.

When the tire is inflated these braided wires contract. Then the tire is held to the rim by a pressure of 134 pounds to the inch. So it can't even creep on the rim.

That is why hooks are unnecessary. That is why you turn the flanges out, so the tires when deflated come against a rounded edge.

This feature we control, and there is no other practical way to accomplish the purpose. The braided wires which contract under air pressure are essential to a safe hookless tire.

Sixty-four leading motor car makers have contracted for Goodyears for 1911. They know from experience what these two features mean

No Extra Cost

Remember that Goodyear No-Rim-Cut tires now cost no more than other standard tires. You get the oversize free. You get tires which can't rim-cut at the price of tires which may be wrecked in a moment. That difference is going to save motor car owners millions of dollars this year.

GOODYEAR
No-Rim-Cut Tires
With or Without Non-Skid Tread

Ask for the Book

Our Tire Book tells a score of facts which motor car owners should know. To follow it means to save half of your tire cost. It is full of tersely-told information. Write us a postal saying, "Send me your Tire Book," and the next mail will bring it to you. Please don't forget.

THE GOODYEAR TIRE & RUBBER COMPANY, Arthur Street, AKRON, OHIO

Branches in All the Principal Cities

Canadian Factory: Bowmanville, Ontario

We Make All Sorts of Rubber Tires

Main Canadian Office: Toronto, Ontario

See our Exhibit at the Shows—122 Elevated Platform, Madison Square Garden; Chicago, 51-52 Coliseum Gallery; Boston, F 543-544.

(142)

ZIG - ZAG TIRE CHAINS

Back On the Job

Having utterly routed the Weed Chain Co. in the United States Court of Appeals, we are now making and delivering

ZIG - ZAG Tire Chains

in greater quantities than ever.

While temporarily restrained from marketing these chains we have increased and perfected our manufacturing facilities and are now making more chains and better chains than before.

The fact that these chains are the only anti-skid device that are equally effective as a preventive of skidding and an aid to traction, coupled with their long life, silence and freedom from wear on both tire and chain has created a demand far greater than for any other tire chain.

Our improved methods of manufacture and freedom from legal interference enables us to quote a new cut-price to dealers that will enable them to sell the RIGHT CHAIN at the RIGHT PRICE with greater profit than ever before.

Retail Price List

28x2½	\$3.50	32x4	\$6.00	40x4½	\$11.00
30x2½	3.75	33x4	6.50	42x4½	12.50
28x3	4.00	34x4	7.00	34x5	8.50
30x3	4.50	35x4	7.50	35x5	9.00
32x3	5.00	36x4	7.50	36x5	9.00
34x3	5.50	37x4	8.00	37x5	9.75
36x3	6.00	40x4	10.00	38x5	10.50
28x3½	4.50	30x4½	6.50	39x5	11.25
30x3½	5.00	32x4½	7.00	40x5	12.00
32x3½	5.50	34x4½	7.50	36x5½	12.00
34x3½	6.00	35x4½	8.00	37x5½	13.00
36x3½	6.50	36x4½	8.00	38x5½	14.00
30x4	5.50	37x4½	8.75	38x6	14.00
31x4	6.00	38x4½	9.50	40x6	15.00

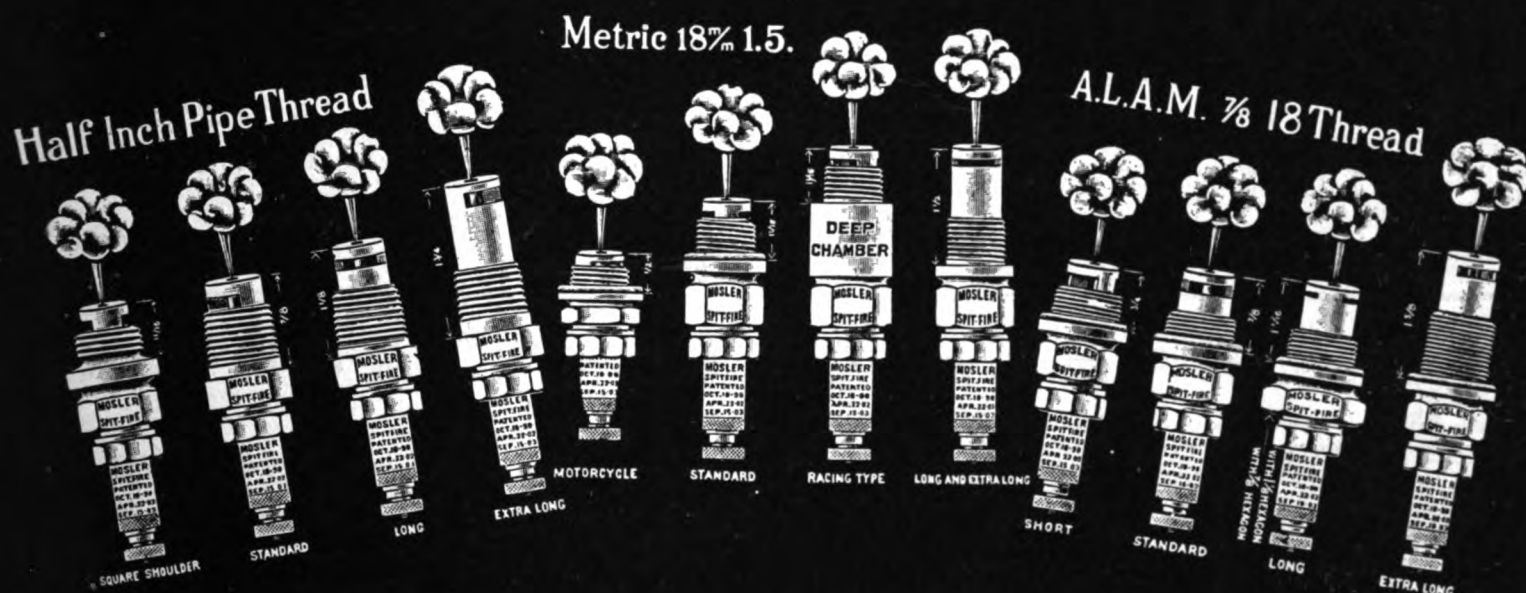
If your dealer does not carry them, send us his name and address, and we will send you a set by express, prepaid, on receipt of price as per above list.

MOTOR APPLIANCES CO., 237 Randolph St., Chicago, Ill.

Mosler Spit Fire

THE PLUG
WITH THE DEEPEST CHAMBER

Leads the World



MAGNETO & MICA TYPES

VESUVIUS & STANDARD TYPES

SHOOTS A FLAME HOT AS THE FIRES OF VESUVIUS
IGNITES THE CHARGE ENERGETICALLY AND UNFAILINGLY
Energetic Ignition Greater Power

Dealers and jobbers beware! We protect our trade mark

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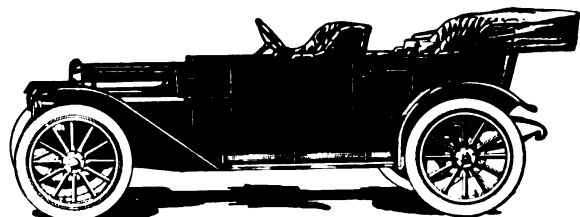
FOR YOUR PROTECTION



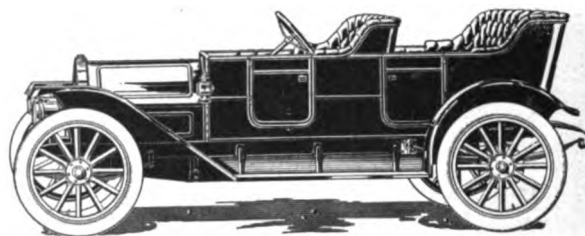
DON'T BUY IMITATIONS.

A. R. MOSLER & Co. 163 W 29TH ST. NEW YORK.

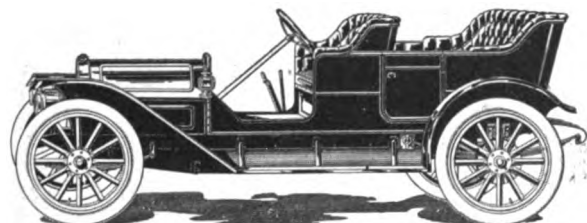
TAKE A GOOD LOOK at the De Tamble cars here illustrated, study their specifications and equipment, compare them with any others that you can obtain, and then say if any other full size, high grade car offers anything like such value for the money. Get rich quick methods are rapidly bringing their natural results and automobile values and prices—there's a difference between values and prices—are finding their proper levels. De Tamble methods and prices were right from the beginning. No one can pay more and get his money's worth or pay less and get De Tamble value.



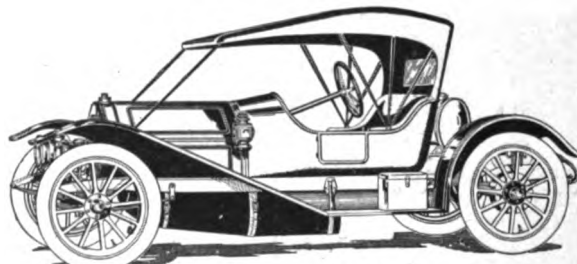
Model K—7-Passenger Fore Door—\$1,675.



Model J—5-Passenger Fore Door—\$1,200.



Model H—5-Passenger Touring Car—\$1,150.



Model G—2-Passenger Roadster—\$1,000.

SPECIFICATIONS:

MODEL K 40—45 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; full floating ball bearing rear axle; 120-in. wheel base; 36-in. wheels; Splitdorf magneto; dual ignition; Rushmore gas lamps; Prest-O-Lite tank; three oil lamps; horn; mohair top; wind shield; speedometer; tools; jack and pump.

MODELS G-H-J—36 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; semi-floating ball bearing rear axle; 115-in. wheel base; 34-in. wheels; magneto and dual ignition system; Rushmore gas lamps; generator; three oil lamps; tools; jack and pump.

Catalog and full details of our complete line sent on request. Open territory proposition for live dealers.

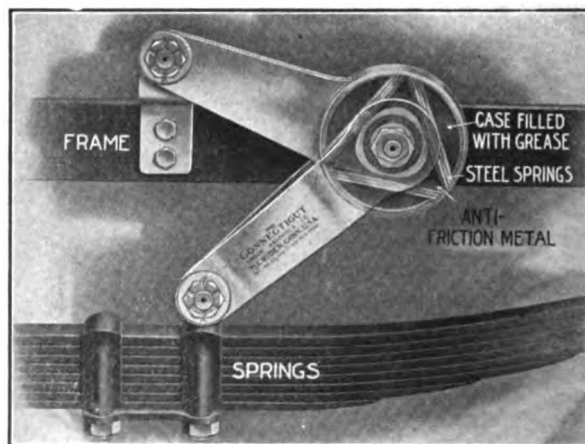
THE De TAMBLe MOTORS CO., Anderson, Indiana

NO CHARGE FOR ATTACHING **CONNECTICUT** SHOCK ABSORBERS

You can now purchase the famous CONNECTICUT Absorbers and have them attached to your car absolutely free of charge. We have just appointed installing stations throughout the country for the accommodation of our customers. Each station is at your service.

The CONNECTICUT Absorber is undoubtedly the best—everyone says so. No friction, hydraulics or pneumatics. No braking effect on normal movement of car. No adjustment after being once properly installed.

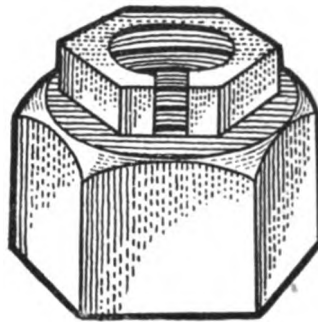
We not only attach our absorbers free at our installing stations, but we offer them to you for a ten days' trial at our expense. Just tell us name, year, model and weight of your car and we'll see that you get a set.



Sectional View

CONNECTICUT SHOCK ABSORBER CO., Inc.
20 Britannia Street
MERIDEN, CONN.

"It Stays Put"



Put an Improved Columbia Lock Nut anywhere on your car and it "stays put." It actually LOCKS the parts together and while it is easily un-locked the unlocking must be intentional and done with a wrench or similar tool. Vibration, shocks or jars have absolutely no effect on Improved Columbia Lock Nuts.

Their adoption and general use by the great railroad systems of the country is significant. Improved Columbia Lock Nuts should be used on every vital part of a motor car.

See us at Space 154 Madison Square Garden Show or let us send you our booklet telling all about it.

COLUMBIA NUT & BOLT COMPANY

Bridgeport, Conn.

WE cordially invite you to visit our exhibit at the New York, Chicago and Boston Automobile Shows and inspect our castings. The leading companies using these are:

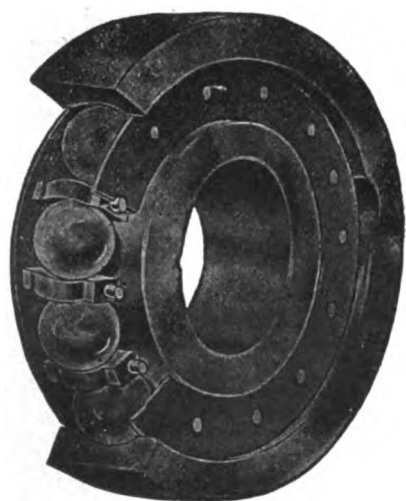
PACKARD
WINTON
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PREMIER
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SULTAN
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COLUMBIA
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ALDEN SAMPSON
LOCOMOBILE
PULLMAN
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The Wm. Cramp & Sons Ship and Engine Building Co.
PHILADELPHIA, PA.

The Pioneers to Employ 92%
of Balls in the Raceway



SCHAFER

Ball Bearings

Fear No Comparison

LUBRICATION About twice a year the housing should be packed with a good grease, free from acid. Should bearings be exposed to water (which proves disastrous) more frequent packing with grease to keep out the moisture will prolong their life indefinitely. Bearings must not be allowed to rust or be free from grease.

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— **SOLE IMPORTERS** —

BARTHEL, DALY & MILLER, 42 Broadway, New York City

Economy

is instituted in the upkeep of your car by the use of

G & J TIRES

which assure at all times

Quality

In their construction nothing but the very best material is used, none but the most approved and up-to-date methods are employed. No tire is allowed to leave the factory until it has undergone a series of most rigid inspections.

Service

Compare the service given by G & J TIRES with the tires you are using at the present time. Ask anyone who has used our tires during the past year what results he has obtained from them and his testimony will be convincing.

Satisfaction

As evidenced by the following extracts from a few of our users:

"The G & J TIRE has been the most satisfactory tire we have used."

"The one with 11,000 miles to its credit has been used unceasingly for 23 months."

"My experience with the G & J TIRE has been altogether satisfactory."

"I have used my set of tires over 7,000 miles."

"Are the best I have ever used."

G & J TIRE CO. Indianapolis, Indiana

Branches and Agencies Everywhere

There is no room for argument

Price should not enter into the purchase of cylinder castings. The main problem is to secure not merely good castings, but the best castings obtainable. Cylinders are the one part where no chance may be taken; no element of uncertainty find room.

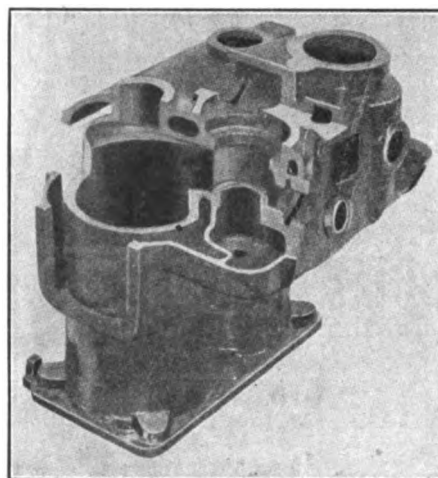
Castings **MUST** be perfect, else care and perfection in everything else count for naught.

We have been making automobile castings, hundreds of thousands of them, for America's leading car makers, ever since the inception of the automobile industry. Our formulas are fixed and unvarying; our castings are as nearly flawless as human skill and care can make them. Defects are guarded against with every precaution that experience dictates and rigid inspection provides.

Increased capacity permits of our taking on a limited number of high-class accounts.

Our guarantee is perfect castings and deliveries according to contract.

MANUFACTURERS FOUNDRY CO.
Waterbury, Conn.



BE POSITIVE IT'S A RUTENBER MOTOR IN THAT CAR YOU SELECT

YOU may then feel assured that you have the best power plant money can buy, guaranteed for life. You can find a Rutember motor in any priced car above \$1250, "Built to Use" and you will not part with one once you have owned and driven it.

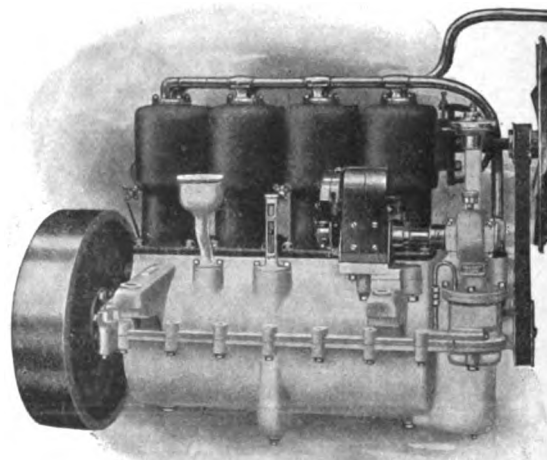
Exhibit No. 109, Coliseum Annex, Chicago.

If you buy a car before you see our exhibit and get acquainted with the Rutember motor, you'll always regret it.

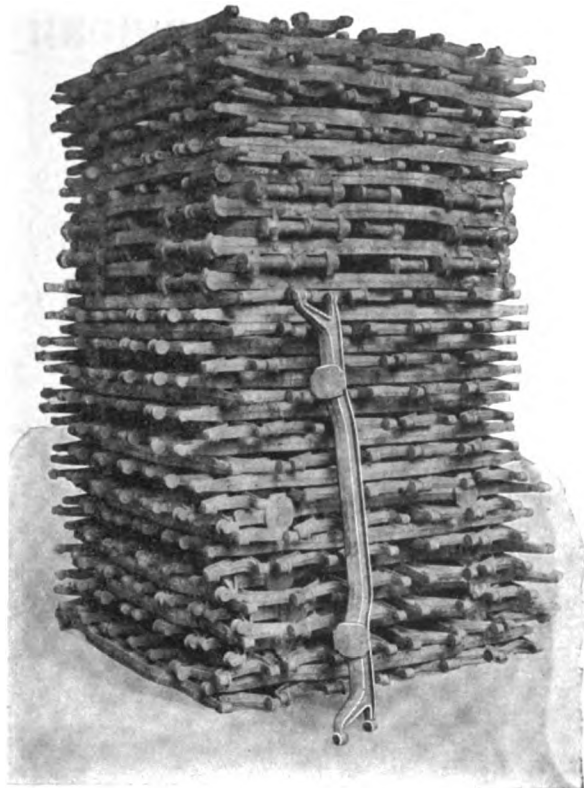
When a motor outlives the rest of the car it's a real motor.

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Magneto Side—Model "RA"
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through our Catalog of Auto For-
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You will probably find in our large stock just what you need, without wasting time or money on special forgings. Write for this catalog now.

Of course, at the same time we make special forgings from manufacturers' specifications in great variety and quantities. Let us have a look at your blue-prints.

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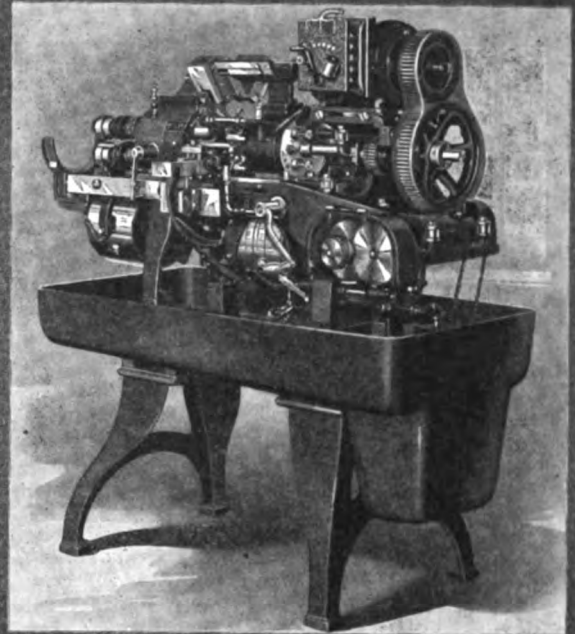
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All Acmes are built with the Single Drive (Belt or Motor) and may be changed from one to the other with very little extra equipment. Any standard, alternating or direct current motor may be applied.

For the operator's convenience and as a time saver the Acme takes the leading position in shops where all kinds of parts are made in duplicate from brass, steel and iron.

Get our booklet ("The Production of Duplicate Parts"). It tells why the Acme is Rapid, Accurate and Economical.

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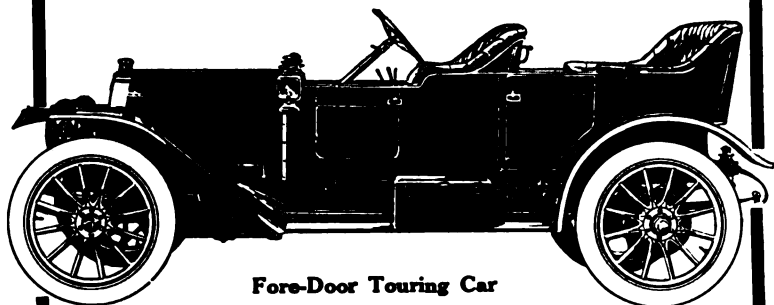
NEW YORK, 77 White St.; CHICAGO, 549 Washington Blvd.; BOSTON, 141 Milk St.; DETROIT, 1222 Majestic Bldg.; ATLANTA, Candler Bldg.; MONTREAL, Canada.

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Monarch of the Road King of the Speedway

You may not care to use continually the 70-mile-an-hour speed of the great untiring National 40 motor (5-in. bore by 5 11-16-in. stroke). But it is comforting to know that you have plenty of reserve power for any and every emergency. The knowledge that no fiber of the mechanism has faltered in the gruelling test of leading race classics on road, speedway and hill gives a satisfying assurance of dependability.

Silent, invincible strength and luxurious riding qualities of the majestic National 40 will delight the most conservative. And the sportsman who likes to accept the challenge of the open road will revel in the great power and speed of the National 40—identical with the National of racing fame.



Fore-Door Touring Car

The prestige of the repeated racing triumphs is a valuable asset to every National dealer.

The 1911 output is limited. Our present distributors want every car we can build and more. *We desire wider distribution, however, and have an attractive proposition for a few more good dealers in unallotted territory. Better wire.*

Prices { TOURING CAR
TOY TONNEAU
SPEEDWAY ROADSTER } **\$2,500**
Fore-Door Touring and Toy Tonneau, \$2,600

NATIONAL MOTOR VEHICLE CO.

1007 E. 22d Street

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Licensed under Selden patent.

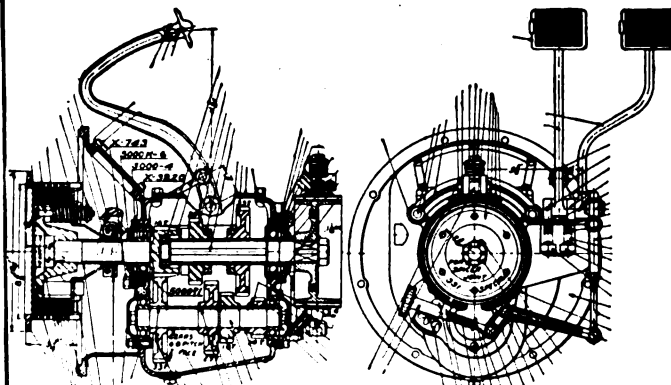
Warner Gear Company's

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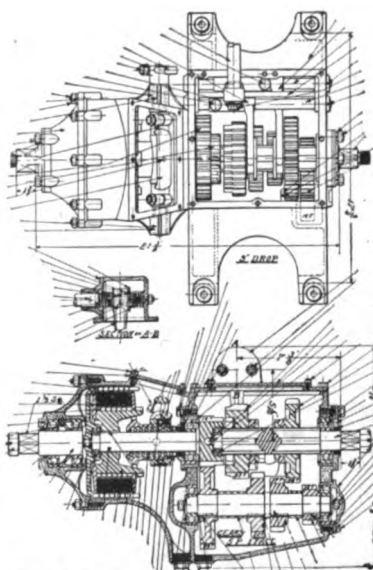
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*With improved features
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Model 95—Unit Transmission, Brake and Control Pedals, with Raybestos-faced Disc Clutch. 25-35 H. P.



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Either separate or Combined Units, adapted to any style construction for both

**PLEASURE
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OF QUALITY

Let us help in solving that MANUFACTURING PROBLEM

- ☐ By furnishing your axle equipments in carload lots as you need them and when you need them.
- ☐ I beam or tubular fronts, chain or bevel drive rears, cup and cone-annular or roller type bearing.
- ☐ Our standard equipments include all the improved types in use.
- ☐ We are specialists in this line and our experience is at your disposal.

THE AMERICAN BALL BEARING CO.

L. S. & M. S. Ry. and Edgewater Park
CLEVELAND, OHIO

HARTFORD JOINTS

AN IDEAL Universal Joint Equipment

HARTFORD JOINTS

That's what the majority think about this assembly. Type K-400.

The rear joint is a trunion block or slotted yoke type, as shown open in Fig. 2. This takes all the slip or lateral motion. This construction is unquestionably better than taking the lateral motion or slip by a square shaft sliding in a sleeve. All working parts hardened and ground and thoroughly protected from dirt and dust.

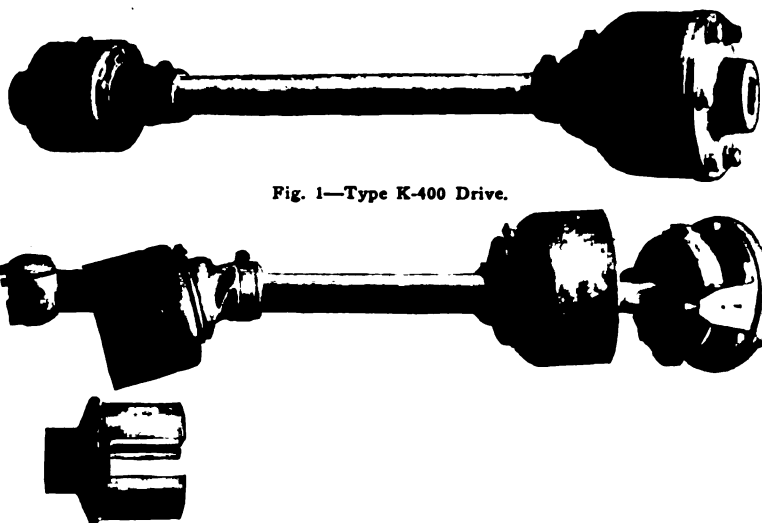


Fig. 1—Type K-400 Drive.

Fig. 2—Showing Both Joints Open.

The front joint is a ring and pin type with a hammer or T-head end forged on the propeller shaft. See right hand joint, Fig. 2. This joint will take any angle required. The construction is such that the joint will stand no end of abuse. It is perfectly housed, and thus grease tight as well as dust proof. The front joint having companion flange simplifies assembly.

You will be surprised at the price.

THE HARTFORD AUTO PARTS COMPANY, 85 Huyshope Avenue, Hartford, Conn.

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UNDER THE AUSPICES OF THE NATIONAL ASSOCIATION
OF AUTOMOBILE MANUFACTURERS, INCORPORATED

Will Be Held, As Usual

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Over 100 Exhibits of Cars—200 or More Exhibits of Accessories.

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STANDARD IN NAME, QUALITY AND DESIGN

Our Product is Used by 97 Per Cent. of American Motor Car Manufacturers

Standard Annular Ball Bearings

Standard Taper Roller Bearings

(Light, Medium and Heavy Series)

Standard Grooved Ball Thrust Bearings

Standard Journal Roller Bearings



Standard Annular Roller Bearings

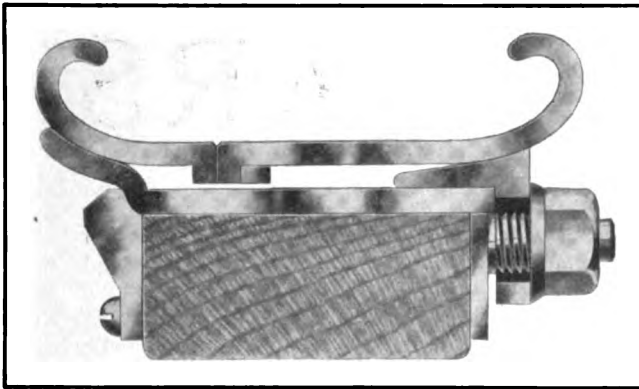
Standard Ball Thrust Collar Bearings

Standard Roller Motor Bearings

"Standard Alloy" and
"High Duty" Steel Balls

See our exhibit, Space 163, Madison Square Garden Show

STANDARD ROLLER BEARING COMPANY, Philadelphia, Pa.



THE STANDARD UNIVERSAL QUICK DETACHABLE DEMOUNTABLE No. 3

For Clincher Type Tires Only

This rim is in effect a Standard Clincher Rim that has been made separable. A number of L shaped frets extend around the inner edge of one section which correspond to a number of raised lugs or teeth on the other section. In assembling these two sections are brought together so that the frets and lugs are in a position to engage. A slight rotary movement then completes engagement and a definite lock is accomplished by means of a spring hinge device. The rim is mounted on a well-known and popular demountable equipment and, as a whole, is strong, thoroughly safe and always dependable. It stands the test of service.

THE STANDARD WELDING COMPANY

PIONEER RIM MAKERS

CLEVELAND

DETROIT

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NEW YORK

BROWN-LIPE GEAR COMPANY BROWN-LIPE-CHAPIN COMPANY

Announcement

On January 1st our Differential Gear Department began to be operated by the Brown-Lipe-Chapin Company in its magnificent new plant; capacity, 200,000 Differentials per year.

Our Transmission and Steering Gear Departments will continue as heretofore only with facilities increased many times.

We are preparing a line of Transmission, Steering and Differential Gears for trucks and delivery wagons and will work up this branch of the business, which for lack of facilities we have been unable to properly do heretofore.

All Will be Brown-Lipe Gears

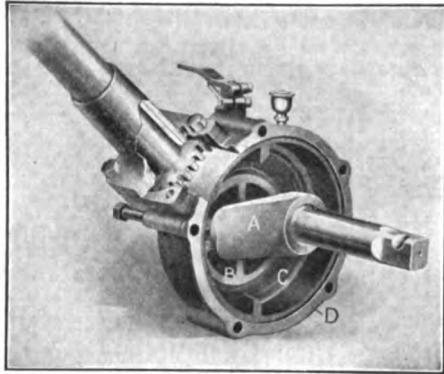
Both plants will be under the same management and selling organization; the stockholders of the Brown-Lipe Gear Company holding a controlling interest in the new company. Both factories at Syracuse, N. Y. High quality and prompt service is our motto.

H. W. CHAPIN, General Manager

SALES REPRESENTATIVES.

THOS. J. WETZEL, 17 W. 42nd St., New York, N. Y. K. FRANKLIN PETERSON, 150 Michigan Ave., Chicago, Ill.
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BALDWIN NEW STEERING GEAR (Brown Patent) is now ready for delivery. Novel in design and on correct mechanical lines. No gears for wearing parts. No "back-lash"; nothing to wear out; no adjustments to make. No "take-up" necessary. All wearing parts are large surfaces operating in oil. Send for descriptive circular.

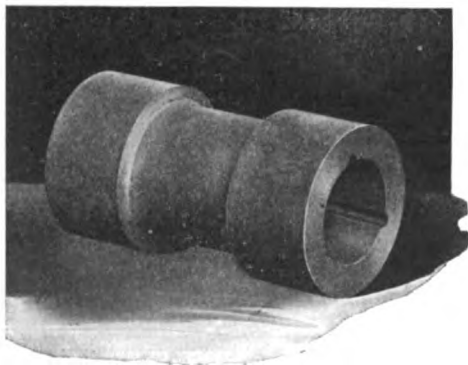
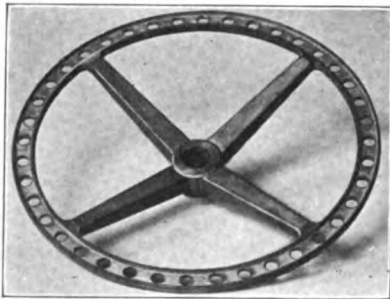
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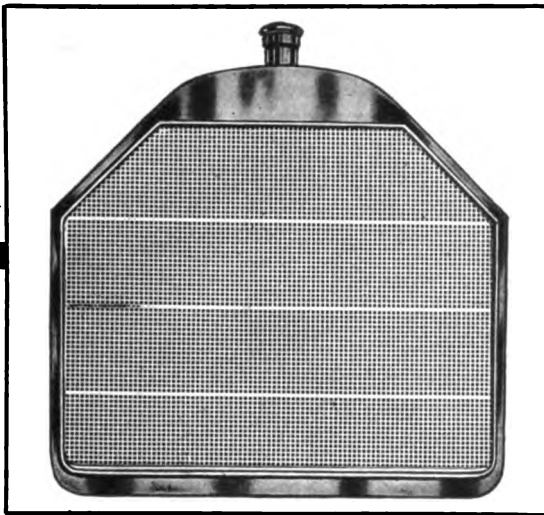
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THE BUSH RADIATOR FOR 1911

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IN APPEARANCE—The Finest
IN CONSTRUCTION—The Simplest
IN SERVICE—The Most Satisfactory

"The Most Practical Radiator"

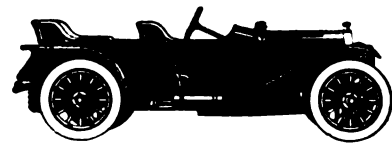
Ask those who have used them in 1909 and 1910.

THE BUSH MFG. CO., Hartford, Conn.

Speedwell

So far as value and serviceability and beauty are concerned, Speedwell cars are in the \$4000 to \$6000 class.

A request for the Speedwell literature will bring you complete information about these splendid \$2500 to \$2900 cars.



Model 11-H Special—Semi-Racer Toy Tonneau—\$2700
All models have 50 H. P., 4 cylinder motor, 121 inch wheelbase

The Speedwell Motor Car Co.

Licensed under Selden patent.

50 Essex Avenue

DAYTON, OHIO

"Gramm"

THE STRONG POINTS—

Three Point Suspension.
Gramm Multiple Disk Clutch.
Gramm Roller Spring Suspension.

The Gramm Motor Car Co.

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New York Headquarters—CROSS-MAGILL MOTOR TRUCK CO.,
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At the Auto Shows

notice the great number of cars equipped with

"WHITNEY" CHAINS

We shall exhibit a complete line
of High Grade Driving Chains.

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The one car in America that offers you all that a high grade, high power car can offer; and in addition the tremendous advantages in operation and maintenance which only a perfect valveless motor can give.

SIMPLEX MOTOR CAR COMPANY

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Mishawaka, Ind.

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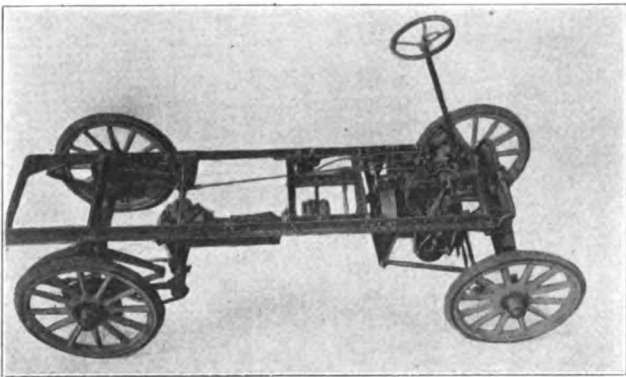
"Geared-to-the-Truth"

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UNITED MANUFACTURERS

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NEW YORK



WHERE THE MONEY GOES— Repairs

It costs from \$25 to \$50 to tear down the average truck, clean and examine its parts and re-assemble—exclusive of the actual work of repairs. It costs more to get at the defective part than it does to make it right—BECAUSE OF THE WAY THEY ARE PUT TOGETHER.

Economy trucks will save 75% of your repair bills—BECAUSE OF THE WAY THEY ARE PUT TOGETHER—Unit assembly.

Economy engines can be entirely removed or replaced in 45 minutes; transmissions in 35 minutes; radiators in 15 minutes, and jack-shafts in 20 minutes, either part without disturbing the other two and all without disturbing the body.

CONVENIENT? Nothing like it on the market.

ECONOMICAL? After all, it is not the first cost, but the repairs and up-keep that staggers the owner.

The Economy elements are the best the market affords; Davis motors, Ball transmissions, Muncie jack-shafts, Tut-hill springs, Sheldon axles, Hayes wheels, Long radiators and Foster steering gears.

Bodies to suit your requirements.

IF YOU CAN SUGGEST ANY IMPROVEMENTS ON THIS TRUCK, WE WILL GLADLY PAY FOR THE INFORMATION.

The Economy truck is not the development of an engineer's idea; it is the result of experience. It is built from the users standpoint. We've been at it four years.

Two capacities only, 1000 lbs. and 2000 lbs.

We would like to correspond with garage and repair men with the object of establishing Economy Maintenance Stations.

We do not require the purchase of a demonstrator.

ECONOMY MOTOR CAR COMPANY
Bissel and Cass Sts. JOLIET, ILL.



1911

Greetings

J. S. Bretz
and Associates

WE ARE YET AT THE

Garden Show
Space 586, Basement

PART II.—JANUARY 16—21

F & S

Annular Ball Bearings

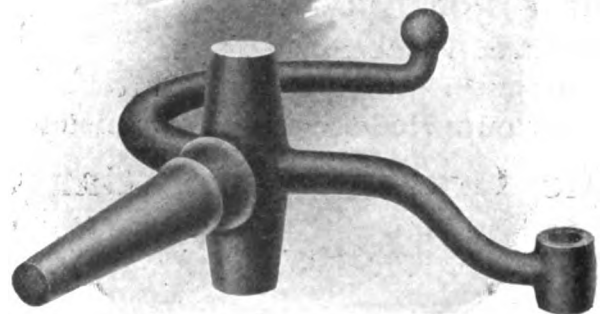
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Magnetol

Bowden Patent Wire Mechanism
German Steel Balls



ONE OF THE PIECES WE MAKE

Automobile Drop Forgings

OF EVERY DESCRIPTION

Chrome Nickel and Nickel Steel Work a Specialty

BLUE PRINTS SOLICITED.
PROMPT DELIVERIES.

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We also make YALE MOTORCYCLES, YALE and SNELL BICYCLES, CONSOLIDATED PACKAGE CARS and HUSSEY HANDLE BARS.

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It's because the vast army of Solar users have spread abroad through the motoring public the knowledge that Solars are the only absolutely, reliable, dependable and satisfactory lamp equipment.

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Have him put Solars on your car, and join the great army of those who have abolished lighting troubles.

We should like to place our interesting free catalog in your hands.



(93)

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Kenosha, Wis.

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WHAT IS YOUR IDEAL OF A MOTOR CAR?

We will gladly tell you—simply fill out this coupon.

STEVENS-DURVEA COMPANY,

Licensed under Selden patent.

Chicopee Falls, Massachusetts.

Gentlemen:—Kindly mail booklet No. 5.

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OUR plant equipment is of the largest and most complete kind; our experience dates from the beginning of the automobile industry and our reputation guarantees the quality of the product. We are ready and willing to lend a helpful hand to builders and have a fund of valuable information which is at their disposal. Write us.

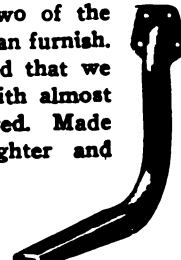
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With ears
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These cuts show only two of the various styles of heads we can furnish. Our dies are so constructed that we can make these hangers with almost any drop or extension desired. Made from 5-32 inch steel—lighter and stronger than forgings.



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"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

\$1250

Runabout, Baby Tonneau, Touring Car, Coupe
Greatest Automobile Value in America

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Heinze High Tension Magneto



Construction—Mechanically unequalled.

Durability—Greater than the life of the car.

Efficiency—Proven by the users.

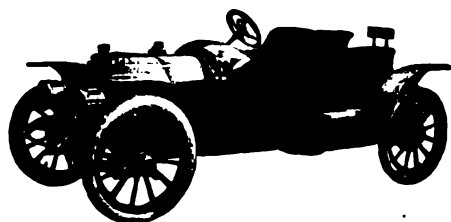
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TOURING CAR
TOY TONNEAU
SPEEDSTER

Each \$2150



Style, Luxury, Quality, Strength, Speed.

Made Right and Stays Right

Let us hear from you.

MERCER AUTOMOBILE CO., Box 126, Trenton, N. J.



Built in New England from all that is best in material and advanced design by a factory over ten years in the business of high grade motor car manufacture exclusively.

Two chassis—4-cylinder 40 H. P. and 6-cylinder 60 H. P. with a choice of a dozen different body designs.
FROM 3000 TO 6000 DOLLARS IN PRICE

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110,000 Pressed Steel Automobile Frames Our Output—August 1st, 1909, to August 1st, 1910.

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"The car with the invisible start."

96 in. wheel base
32 in. wheels

22½ H. P. \$800

Sliding gear transmission. Multiple disc clutch. Weight, 1200 lbs.



Runabout \$800.
Roadster \$825.
Surrey \$850.

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Car Company
DETROIT**

MAXWELL CARS

1911 Line

Model E. A. Touring Car, 4-cylinder, 30 h. p., price,	\$1350
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Maxwell-Briscoe Motor Co.

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The H. F. M. Oil Filtering

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Provide Clean, Cool Oil All the Time.

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\$1,600 Cartercar

Model "L," 4 cylinder, 30-35 H.P., 110 inch wheel base, 5 passenger, Friction Transmission, Chain-in-Oil Drive, any number of speeds, will climb a 50% grade with load, including magneto, gas lamps, generator, horn, mats, tools, jack, etc. \$1,600.

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HENRY "40"

Perfect Road Score in 1000 Mile Reliability Contest

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\$1750

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YOU WILL LIKE OUR MODEL "K" AT \$900

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Genuine Tool Steel Tubing made from electric melted High Carbon Tool Steel containing chromium.

Can be used to advantage for any purpose where solid bar tool steel, with the center bored or drilled out, is now being used.

Saves weight and cost of machining.

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The Perfectly Standardized Car

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143 WATERLOO ST., DETROIT, MICH.

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Don't take chances on the wiring of your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

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Driver Geo. Clark Added More

victories in the Dallas, Texas, meet to the long string which he has annexed this summer in a Cutting 40 equipped with a

Remy Magneto

"Best in the World"

REMY ELECTRIC COMPANY

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SERVICE and SATISFACTION

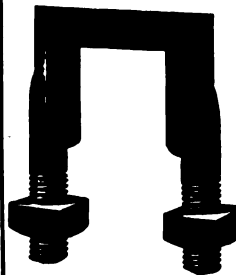
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G & J TIRES

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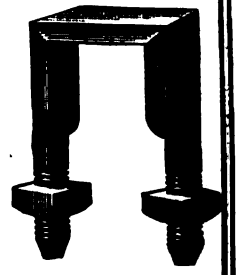
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We Sell Continental Demountable Rims.

Forgings for the Automobile Trade



**SATISFACTION
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PREVENTS
FOGGY WIND SHIELDS



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Rub a little GLASSO on your wind shield and you are sure of a clear vision. Rain, snow or mist slides off glass that has been polished with GLASSO like water off a duck's back.



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A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasso will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

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IGNITION ABSOLUTELY SURE

RAJAN AUTO SUPPLY COMPANY

BLOOMFIELD, NEW JERSEY, U. S. A.

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"K-B" Universal Joints

FOR
COMMERCIAL CARS
PLEASURE CARS

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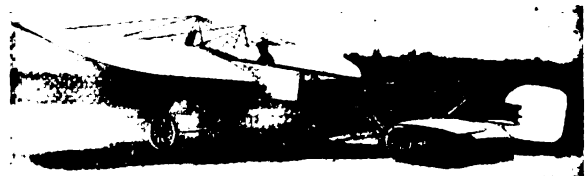
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Prompt Deliveries

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METZ AIR CAR—BLERIOT TYPE.

EVERYBODY MAY FLY

Aeroplanes complete or in the knock-down. Motors 30, 60 and 120 H. P.; propellers and all component parts.
Manufacturers of Metz Runabouts—lightest and most economical automobile in the world.

We want live progressive dealers everywhere.

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GUARANTEED FOR LIFE

The most economical car in the world

Runabout \$750 Touring Car \$900
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HUPP MOTOR CAR COMPANY

Dept. K

DETROIT, MICH.

Licensed under Selden patent.



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from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?

Van Wagner makes that kind.

Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. WRITE US.

E. B. Van Wagner Mfg. Co., 706 Union Bldg. SYRACUSE, N. Y.

You can buy
Rebuilt Thomas Flyers
and other makes practically as good as new which are cheaper and better than some new cars. Prices range from \$750 up. Second-hand small cars taken in exchange.

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FRANKLIN AUTOMOBILES

How the Franklin overcomes tire troubles

Three things have to be considered—tire size, weight of car, riding ease. Franklins, light-weight and resilient, are easy on tires. The tires are never loaded beyond their elastic limit.

Franklins go from three to four times farther on a set of tires than do other automobiles. Tire expense is not a burden.

The average tire service with 1910 Franklins was over 2500 miles without punctures, with blow-outs practically unheard of even up to 8000 to 10000 miles.

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

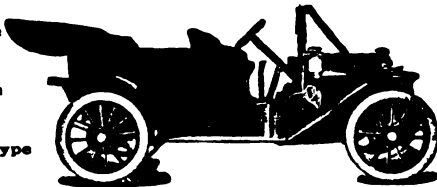
Moline "35"

Winner Chicago Trophy 1910 Glidden Tour
Winner Team Trophy 1000 Mile Chicago Run

Touring Type
\$1650

Toy Tonneau
\$1600

Fore Door Type
\$1700



35 H. P.
36 in. Wheels
112 in.
Wheel Base

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No. 61

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The Classiest Car of Them All

The sturdiest, most rugged, most practical car you can wish for, with the same graceful, fetching lines, rich upholstery and perfect mechanism for which you must pay a thousand dollars more in other cars.

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"Fore-Door"
Touring Car,
30-36 H. P.
\$1,600

Cole Flyer
Torpedo Roadster,
30 H. P.
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Write Today
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The *Paige-Detroit* 1911

4 Cycle—4 Cylinder **\$800**
Full 25 H. P. Motor

Complete specifications and catalogue upon request

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Atterbury Commercial Wagons and Trucks

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WE make vehicles for any kind of business, guarantee efficient service and as one of the oldest makers of commercial power-wagons our product is a known and fixed quantity. We can interest any merchant interested in effecting a business economy.

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LION "40"

40 HORSEPOWER—36 IN. WHEELS—112 IN. WHEELBASE

5-Passenger Touring Car, fully equipped,	\$1500
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5-Passenger Gentleman's Roadster, " "	1450

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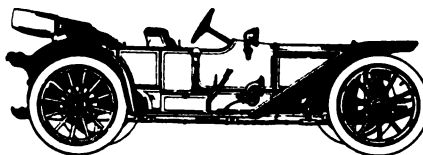
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THE AMERICAN

"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading cities. Increased output this year offers a new opportunity to buyer and dealer alike.



SEMI-TORPEDO TRAVELER

Underbody frame; 40 in. wheels; 4 cyl.; 50 H. P., \$4250.

AMERICAN MOTOR CAR CO., Dept. V, Indianapolis, Ind.
Licensed under Selden patent.

THE 1911 OWEN

The 1911 OWEN BERLIN represents the highest development of closed car construction. It is the embodiment of comfort with exclusive features affording greater convenience than can be enjoyed in other cars. The easy running qualities of the OWEN BERLIN are unequalled because of large wheels, OWEN spring suspension and minimum vibration from the long stroke motor. Combining these features with interior appointments of the most luxurious character, the OWEN BERLIN (seating six) is a car certain to please the most exacting.

Catalog and detailed descriptive matter sent upon request.

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Write today for copy
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means losing.

Ford Motor Company DETROIT, MICH.

KLINE KAR

A Complete Line For the Agent

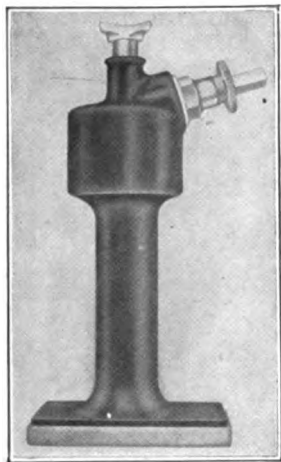
Four Cylinder Cars—24 to 40 H. P.
\$1500 to \$2750

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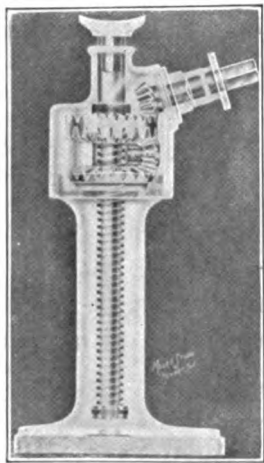
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BCK MOTOR CAR COMPANY, York, Pa.

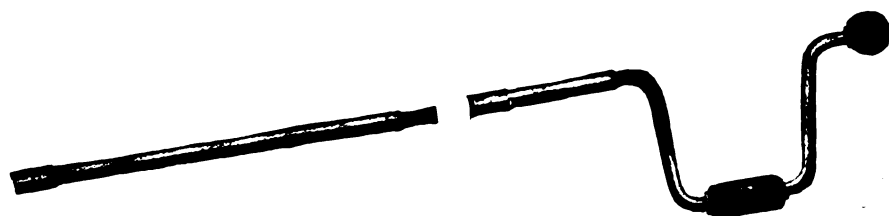
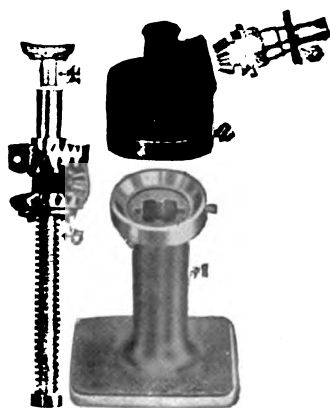
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Attractively finished in black enamel and polished nickel. Handles of polished coca-bola wood. Ash base. Made in Klaxon way—of finest materials and perfect workmanship.



Crank pinion cut from solid bar steel, hardened. All parts solidly fitted, no chance whatever of oil or smut leakage. Height, overall, 11 1/4 inches. Lift 6 inches.



The RAISWELL (Patented) The Perfect Lifting Device Price Ten Dollars

*As different from all ordinary "jacks" as the
KLAXON is unique among sound signals.*

FIRST: note the jointed extension handle—30 inches long. It enables you to place the Raiswell *by means of the handle*—thus doing completely away with the necessity of crawling under your car. The swivel top adjusts itself at once to any convenient angle.

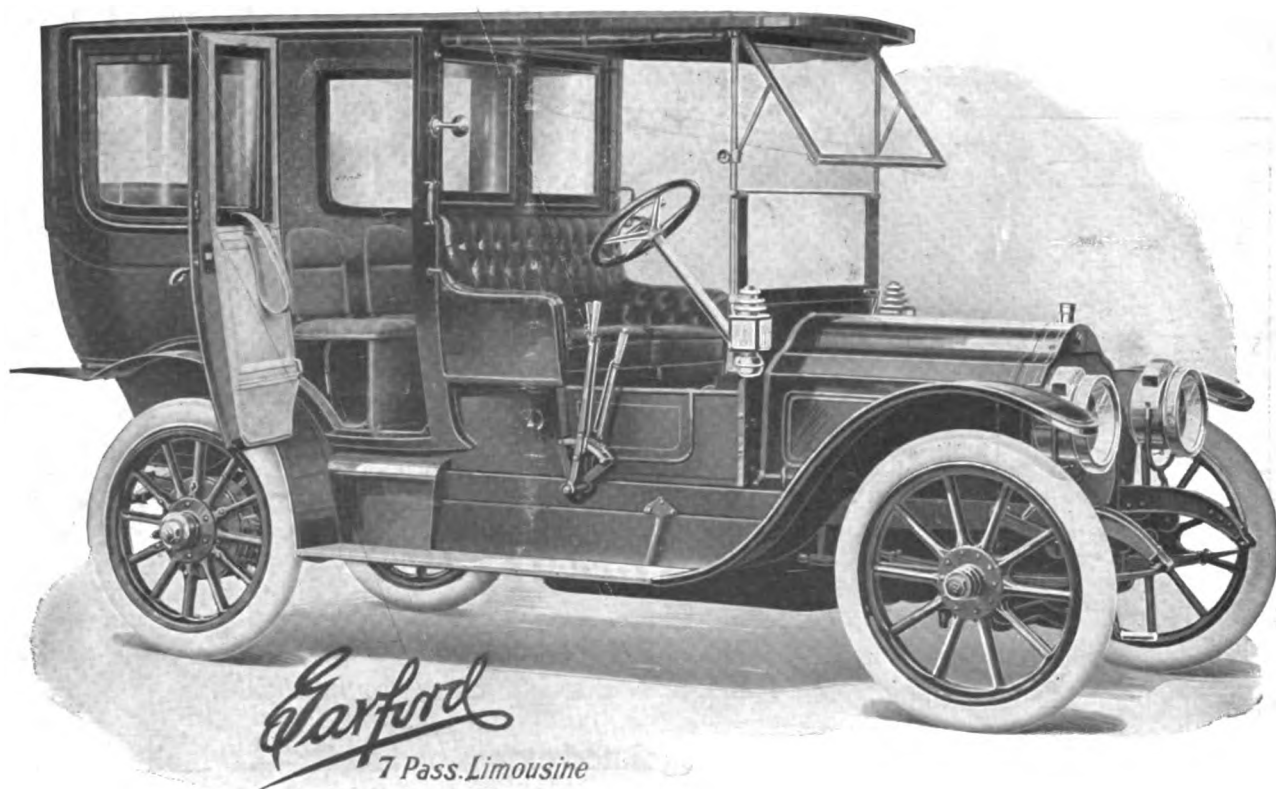
Now you stand *away* from your car—not crouched *under* it—in a comfortable, convenient position, and with an easy, rotary motion of the hand (same as a brace-and-bit) the compact, powerful Raiswell—its gear and pinion combination affording a power increase of 6 to 1—raises any automobile weight—easily—simply—surely.

The RAISWELL is an *out and out* money-saver. It is guaranteed—not for one year—not for five years—but **FOREVER**. It will earn its cost year after year in the clothes, time and temper it saves.

No caps and clothes torn or ruined by the dirty, greasy fender—no awkward pump-handle nor foot work—no broken "jack" just when you need it most.

*Shipped, express prepaid, anywhere in the United States on
thirty days trial, upon receipt of the regular price, \$10.00.*

LOVELL-McCONNELL MANUFACTURING COMPANY
Makers of the
KLAXON WARNING SIGNAL
198 Wright Street Newark, N. J.



THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

Licensed under Selden patent.

ON EXHIBITION AT NEW YORK AND CHICAGO SHOWS.

THE MOTOR WORLD

A trade paper giving the
World's Motor News

Ten cents a copy—
Two dollars a year



Safety Demands SOLAR LAMPS

Nearly all the high-grade American cars are equipped with Solar Lamps.

Some manufacturers do not furnish them unless the buyer insists, because they cost more than common lamps.

We could build—and have been requested to build—cheaper lamps than the Solar, but we don't care to risk it.

A motorist's safety often depends on his lamps—these

should be absolutely reliable. We can't build a dependable lamp and sell it for less than Solars cost.

We don't care to take the risk of building lamps which may fail at a critical moment, causing disappointment, perhaps accident.

If you don't care to take this risk, insist that your car have Solar Lamps.

We will mail you descriptive catalog on request.

Badger Brass Mfg. Co.

Kenosha, Wis.

New York City

(104)



HARTFORD

Wire Grip Non-Skid Tires (Midgley Tread)

The Tire That Has
Solved The Problem Tire
Makers Have Been Working
On For Years.

The Hartford Wire Grip Non-Skid Tire is the only true non-skid that is resilient;

The only true non-skid that does not rack and ruin the car;

The only true non-skid that does not mar the easy riding qualities of the car;

The only non-skid that you carry right with you in the tread of the tire itself;

In other words, it is a pneumatic tire, and a non-skid tire combined; Insure your car, its passengers and the public by putting them on your car now.

This tire is made in standard sizes, Dunlop, Hartford, Quick Detachable Clincher and Clincher; also in millimeter sizes.

WE SELL CONTINENTAL DEMOUNTABLE RIMS

The Hartford Rubber Works Co.
HARTFORD, CONN.

BRANCHES—New York, 57th St. and Broadway; Chicago, 12th St. and Michigan Ave.; Boston, 863 Boylston St.; Philadelphia, 1334 Arch St.; Detroit, 256 Jefferson Ave.; Buffalo, 725 Main St.; Cleveland, 1831 Euclid Ave.; Denver, 1564 Broadway; Atlanta, Ga., 19 Houston St.; Minneapolis, 622 Third Ave., So.; Kansas City, Mo., 719 E. 15th St.; Dallas, Texas, 2029 Commerce St.; St. Louis, Mo., 19th and Locust Sts.

AGENCIES—Chanslor & Lyon Motor Supply Co., San Francisco, Cal.; Los Angeles, Cal.; Fresno, Cal.; Spokane, Wash.; Seattle, Wash.; F. P. Keenan Co., Portland, Ore.; Jos. Woodwell Co., Pittsburg, Pa.; Mercantile Lumber & Supply Co., Kansas City, Mo.



Announcement

We beg to announce that

The Alumaloyd Products Co.

a \$250,000.00 Ohio Corporation, will take over the process, good will and plant of the Alumaloyd Sheet Department of the Stark Rolling Mill Co. of Canton, Ohio.

The general offices and mill of the new corporation will be located at Canton under the management of Mr. R. A. Bartholomew who has spent years in the development of this business.

An enlarged plant and modern equipment will enable the new company to meet the ever increasing demand for its product.

Alumaloyd Products Co.

R. A. BARTHOLOMEW, Pres.

Effective January 16th, 1911



Roadster \$800—with Full Equipment as shown \$875

The Leader in Many Salesrooms

WE present for 1911—in addition to the car manufactured last year—two chassis with a variety of run-about and touring car bodies shown in our catalogue M.

The Paige-Detroit is a car that any man would be proud to own—a handy car for the man who owns big cars and a snappy "big little" car of high efficiency and individuality for any man to own.

Why This Is a Good Car For Everyone to Own

The Paige-Detroit is a car which is worth the money as an economy; while high-power cars costing five or six times as much are luxuries.

Owing to the small cost of maintenance and the ease of handling in the city it is an economical and handy car to go about in.

Besides it takes up very little room in the garage.

It requires no chauffeur—anybody in the family can drive it.

It is easy to crank and to handle.

It's such a useful car that many corporations are buying them for their salesmen and officers as general utility vehicles.

The maintenance cost is low—tires last a long time—mechanism is simple—there are few repairs because all parts are light and strong—will travel 250 miles on one tank of gasoline.

It has all the ordinary advantages of the large car without their disadvantages—for instance—it will turn in a much smaller circle than a large car.

Most small cars rock and tip easily very much to the discomfort of the occupants.

With our spring suspension, however, the seat stays level and allows the car to ride easily over all bumps and ruts of the road.

Plenty of Reserve Power

While most small cars have a small engine we believe in the doctrine of reserve power.

Reserve strength is always a source of satisfaction whether in a bank, army or automobile.

For those who want accurate figures we will say that the A. L. A. M. rating for our motor is 22½ h. p., yet it develops 27 h. p. under test—from eight to ten horsepower more than other cars of this class possess.

A Word About Our Guarantee

We guarantee our car for one year. This is a definite guarantee, nothing misleading or contradictory. We will furnish a new part for any part found defective in material or workmanship if the old part is returned to our factory for inspection, freight prepaid. This refers to all parts of the car, but not accessories and tires, which are guaranteed by the makers. This guarantee is for one year from the date of the purchase of the car and is made to protect both dealer and buyer against imperfections which may be found even in the highest priced cars.

Repair Parts at Cost

We will furnish all repair parts at cost price—something which no other automobile manufacturer has ever offered to do.

We are satisfied with one profit and don't want two.

We do want satisfied owners.

Will Continue 2-Cycle Motor

We shall continue to make our 2-cycle motor.

We firmly believe in its efficiency and future—but we have been forced by the larger demand for the 4-cycle type to make this our leader.

Either type of motor can be furnished.

Specifications

Wheel Base—Touring Car 104 inches. Roadster and Coupé 90 inches.

Axles—Front, I-beam drop forging. Rear axle semi-floating, nickel steel, roller bearings.

Frame—Pressed Steel.

Motor—4 cylinder, 4 cycle, cast en bloc. Bore, 3¼ inches. Stroke, 4 inches.

Valve Arrangement—On left hand side, 5-16 inch lift, 1 9-16 inch valve diameter, drop forge integral cams.

Ignition—Bosch magneto, fixed spark.

Lubrication—Splash. Constant level maintained by plunger pump operated from cam shaft.

Cooling—Thermo syphon.

Clutch—Multiple disc, operating in oil bath.

Change Gear—Sliding, selective.

Speeds—Touring Car, three forward—one reverse. Roadster, two forward—one reverse; ball-bearing transmission in Touring Car. All gears and shaft heat-treated nickel steel.

Brakes—Internal expanding and external contracting on pressed steel drums on rear wheels. Brake rod carried inside frame.

Road Clearance—9¼ inches under axles.

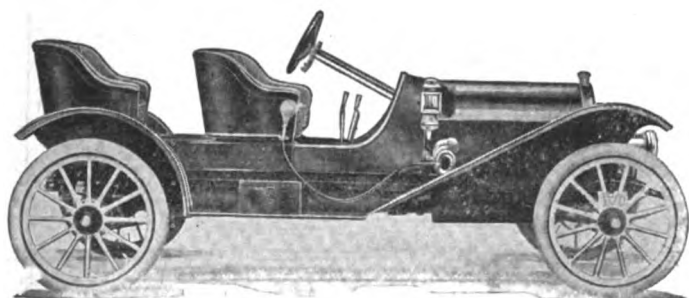
Prices—Roadster, \$800; with full equipment as shown, \$875. Touring Car (with detachable tonneau), \$900. Coupé, with full electric light equipment, \$1250—F. O. B. Detroit.

Catalog Coupon

PAIGE-DETROIT MOTOR CAR CO., DETROIT, MICH.
Gentlemen: Please send me your illustrated catalog.

Name.....

Address.....

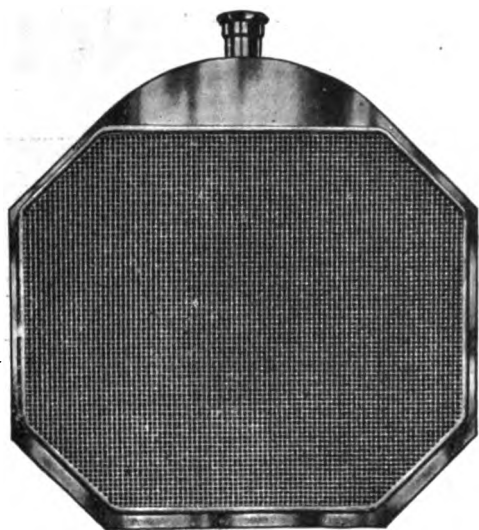


Touring Car, \$900, with detachable rear seats.
Can be used for depot or marketing.

Paige-Detroit Motor Car Co.

245-255 Twenty First Street.

Detroit, Michigan



The Mayo—the radiator thoroughbred

¶ Cars are getting better all the time.

¶ More Mayo Radiators are being used every day.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT



The **FISK** REMOVABLE RIM

Cannot Stick nor Bind
Unaffected by Rust or Mud

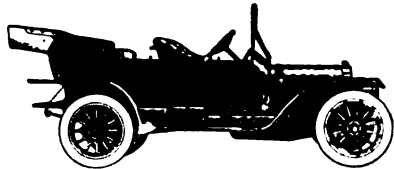
No short staybolts
No excessive weight
No special tools

The Fisk Rubber Company
Chicopee Falls, Mass.
Department 23

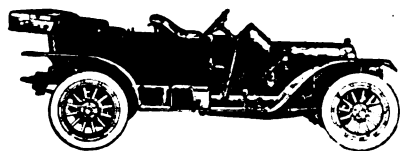
Write for Removable Rim Booklet—Exhibited at Chicago Show
23 Direct Factory Branches

REMOVE THE RIM
THAT IS ALL

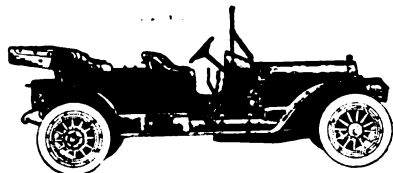
There is a Knox Car for Every Motor Service You May Need



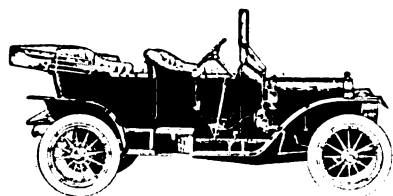
1911 Knox Model "R" 40 H. P., 7-Passenger Touring Car, Series B. Price fully equipped, \$3500.



1911 Knox Model "R" 40 H. P., 4-Passenger Torpedo Car. Price, fully equipped, \$3400.



1911 Knox Model "S" 60 H. P., 5-Passenger Tonneauette, Regular front. Price, fully equipped, \$4900.



1911 Knox Model "R" 40 H. P., 4-Passenger Tonneauette, Series A. Price, fully equipped, \$3350.

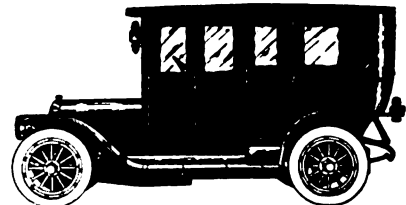
For the social obligations, the theater and shopping there is a richly appointed Knox Limousine with deep tufted cushions and restful springs.

For touring in the open country there is a variety of enclosed bodies with high fore-doors on the Torpedo plan. Fully protected from wind and weather in a Knox fore-door Touring Car you will realize as never before that the standard high grade automobile is a blessing for health and delightful recreation.

And for those who care for speed the 70-mile-an-hour Knox Raceabout, hung low with short wheel-base, will fully answer every craving.

The finish on all Knox cars is flawless. Four hundred dollars cannot replace the standard equipment furnished with every model. The nickel and German Silver trimmings have an individuality that is worth while.

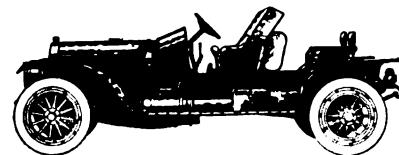
Ten years motor car manufacturing experience is worked all through the mechanism. The best material money can buy is used throughout the chassis, while the workmanship is all New England—the home of the micrometer.



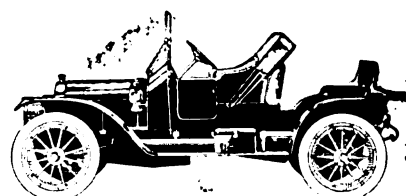
1911 Knox Model "R" 40 H. P., 7-Passenger Fore Door Limousine. Price, fully equipped, \$4400



1911 Knox Model "S" 60 H. P., 7-Passenger Touring Car, Series B. Price, fully equipped, \$5000.



1911 Knox Model "S" 60 H. P., Double Rumble Raceabout, Regular front. Price, fully equipped, \$4800.

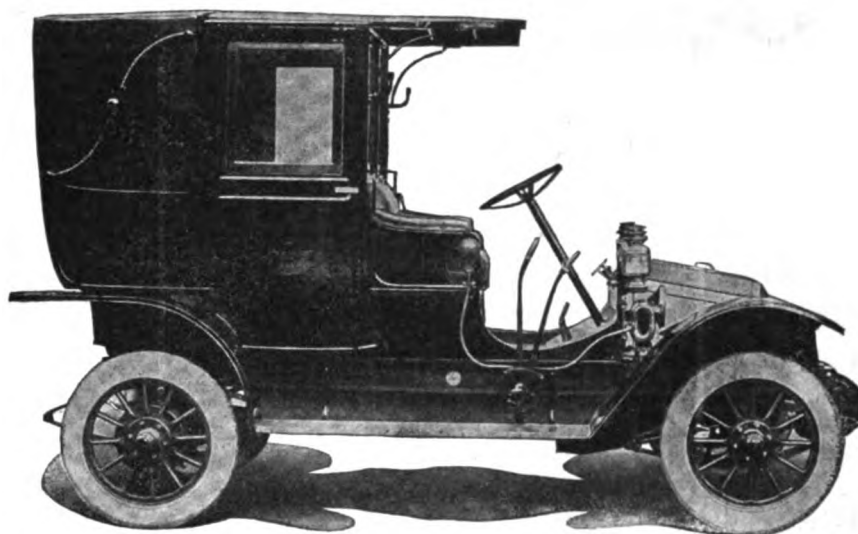


1911 Knox Model, "R" 40 H. P., Double Rumble Raceabout, Series A. Price, fully equipped, \$3300.

A New Catalog is at Your Request

KNOX AUTOMOBILE COMPANY
SPRINGFIELD Member A. L. A. M. **MASSACHUSETTS**

Franklin Taxicabs



You can keep a Franklin Taxicab at work continuously and your cost for tires will only average about two cents per mile.

The average cost for tires with the ordinary taxicab is from six to eight cents per mile.

The taxicab that is hard on tires is hard on itself. That is why the majority of taxicab companies do not earn satisfactory profits. The cabs are rigid riding, wear out tires and cost heavily for repairs.

The Franklin taxicab is the only one that has demonstrated a sufficiently low cost of operation to make its use profitable. It weighs nearly 1000 pounds less than other cabs. Light weight together with full-elliptic springs and wood sills gives a perfect

shock-absorbing construction that saves on the tires and on the whole vehicle besides increasing the comfort of the passengers.

The air-cooled motor on the Franklin taxicab does away with all trouble from the cooling system. There is nothing to get out of order, nothing to freeze; the motor will not overheat.

A taxicab company in Brooklyn, N. Y., is displacing its entire equipment of water-cooled cabs with Franklins.

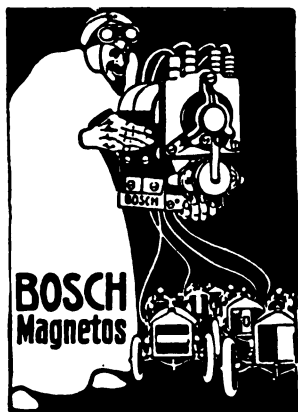
Franklin taxicabs are a guarantee of satisfactory profits.

H H FRANKLIN MANUFACTURING COMPANY Syracuse N Y

Licensed under Selden Patent

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

SOLE DISTRIBUTOR



Bosch Magnetos

Victorious in Commercial Contests

In the truck and commercial vehicle reliability, endurance and economy contests of the year those trucks and vehicles equipped with Bosch Magnetos made the best showing and proved that this Ignition is the most efficient, reliable and economical.

The following list of Bosch-equipped winners is worth your attention:

Bosch-Equipped Commercial Winners

(PHILADELPHIA-ATLANTIC CITY RUN)

Franklin, Autocar, Garford, Frayer-Miller (Kelly), Gaggenau.

NEW YORK TRUCK CONTEST

Chase, Kelly, Alden-Sampson, Brush.

BOSTON COMMERCIAL CONTEST

Warren-Detroit, Franklin, Frayer-Miller, Frayer-Miller, Autocar, Mack.

CHICAGO-MILWAUKEE COMMERCIAL RUN

The Bosch-equipped Brush won in the small truck class, and the Alden-Sampson in the class of the largest vehicles.

The Following High Grade Commercial and Industrial Vehicles Use Bosch Magnetos:

Avery	Decauville	Metzger	Sanbert
American La France	De Dion Bouton	Mack	Sayers-Scovill
Alco	Delahaye	Moyer	Seagrave
Alden-Sampson	Denniston	McIntyre	Schlosser
American Lockport	Frayer-Miller	Mercury	Spoerer
Atlas	Frontenac	Nott Fire Engine	Sternberg
Autocar	Gaggenau	Penn-Unit	Sultan
Brush	Glyde	Pierce-Arrow	Universal
Chase	Garford	Renault	Warren-Detroit
Courier	Hewitt	Republic	Wilcox
Cunningham	Holt	Reliance	White
Croxton-Keeton	Kissel	Rockwell	Wood
Darracq	Knox	Rumely	Willys-Overland

See Our Exhibits at New York, Chicago and Boston Shows.

BOSCH MAGNETO COMPANY

New York

Chicago

Detroit

San Francisco

New Maxwell Prices

THE Maxwell car is widely known as the Great Economy Car, because it has been proven more economical to run than even a horse and buggy. The 40,000 Maxwells in use were built with that end in view and sold because of it. We have made in the past year a consistent effort to effect economies to permit the reduction of the initial cost of the car. Every one will be interested, therefore, in this announcement of a new schedule of prices effective January 1, 1911.

A year ago we affiliated with the United States Motor Company, planning to co-operate with the ten other constituent companies to effect economies in manufacturing and selling motor cars that would enable us to materially reduce the price of production and therefore the selling prices of our cars.

Patiently and persistently we have worked, harmonizing, organizing, specializing, increasing the efficiency of our organization, improving the quality of our product—always with this ultimate end in view.

The fourteen plants of the United States Motor Company, with a capacity of 52,000 cars annually, were organized so that in buying raw material and massing these purchases, we could secure lower prices and higher quality. By interchanging engineering experience, we avoided costly mistakes and produced better cars. Improvements in method in one

plant were introduced immediately in all plants.

By co-operative selling we extended our field and reduced the expense of selling everywhere. We are utilizing 34 Branch Houses and dealers everywhere.

We have now reached the point where the fruit of our efforts can be given to the buyer without sacrificing the interest of our shareholders—when we can introduce a new scale of prices embodying these economies and give you better quality at a lower cost, effecting a material saving to you.

By your purchases of Maxwell cars you have stamped your approval on the car, established it as the most reliable, efficient, economical and practical car for the general use. By our far-sighted policy, by our co-operation with other affiliated companies of the United States Motor Company organization, we are creating a new standard of motor car value for you.

Our New 1911 Prices

Model AB, 2-cylinder, 16-horsepower..... \$600
Equipment now includes top, generator and gas lamps; \$70 worth of extras not formerly included.

Model Q-11, 4-cylinder, 22-horsepower,..... \$750
Runabout previously listed at \$900.

Model Q-3-11, 4-cylinder, 22-horsepower.....\$800
Four-passenger touring car previously listed at \$1000.

Model I, 4-cylinder, 25-horsepower..... \$950
Four-passenger touring car previously listed at \$1100.

Model EA, 4-cylinder, 30-horsepower..... \$1400
Five-passenger touring car previously listed at \$1600.

Model GA, 4-cylinder, 30-horsepower..... \$1400
Four-passenger touring car previously listed at \$1600.

Model GA Roadster, 4-cylinder, 30-horsepower \$1400
Two-passenger roadster previously listed at \$1600. Shock absorbers now included in regular equipment.

MAXWELL-BRISCOE MOTOR COMPANY

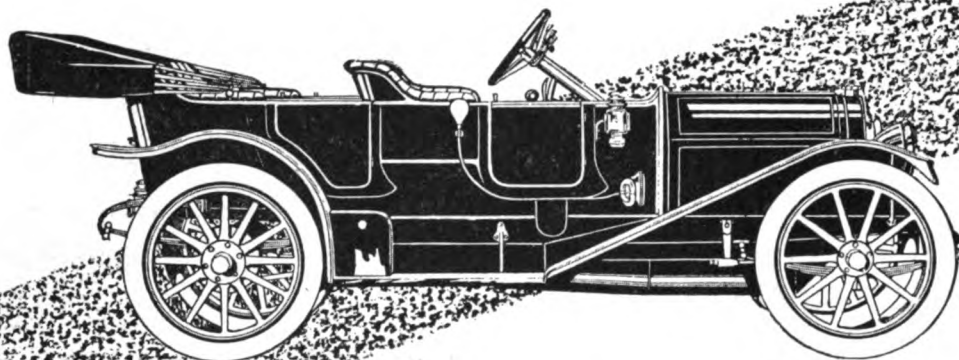
Licensed under Selden patent.

Division of the United States Motor Company

Members A. L. A. M.

Vale Street, Tarrytown, N. Y.

Fore-Door
Demi-Tonneau



You Can Show Features Your Customer Cannot Equal Elsewhere

NOT just a few but many—everywhere about this blue-blood motor car, the one perfectly standardized \$1500 motor car, the motor car of this price that is replete with the features of cars costing up to \$4000, the motor car that tests way above its rating, that will do more than you guarantee.

This \$1500 is a small amount of money for a fully-equipped Abbott-Detroit, but a large amount of money for anyone to spend on one out-and-out purchase. Your customer must be shown and in the Abbott-Detroit you show him the greatest value in a motor car of this price in the world.

Abbott-Detroit

Because our car is sold fully equipped, excepting top and windshield, at \$1500, places it very much ahead of the advertised \$1500 cars whose "extras" bring the price several hundred dollars higher. The agent closes a sale much easier than he does when he has to explain about "extras."

The dealer who gets the Abbott-Detroit Agency for his territory has an advantage over all others. You want this advantage if you can get it, and your next best move is to write us at once for the Book of the Abbott-Detroit and our Special Agency Proposition.

Model B. Five-Passenger Touring Car, Standard Equipment, \$1500 F. O. B. Detroit.

Fore-Door Five-Passenger Touring Car, Standard Equipment, \$1550 F. O. B. Detroit.

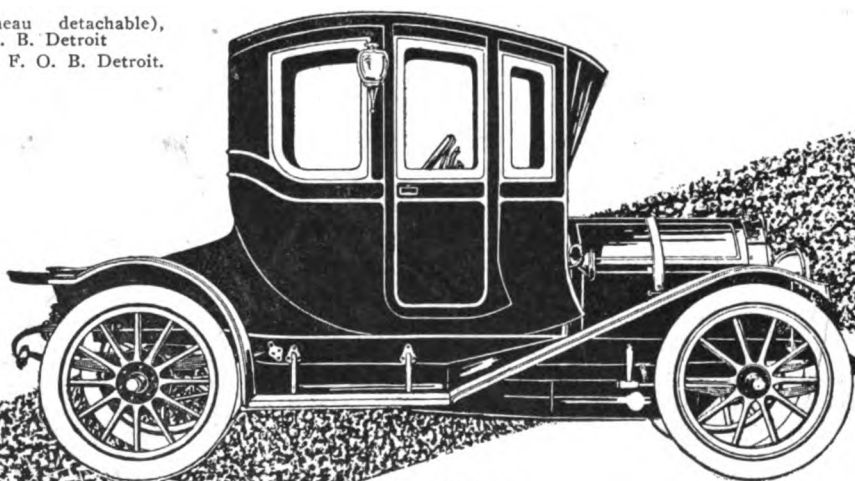
Roadster, Standard Equipment, \$1500 F. O. B. Detroit.

Fore-Door Demi-Tonneau (tonneau detachable), Standard Equipment, \$1650 F. O. B. Detroit.

Coupe, Standard Equipment, \$2350 F. O. B. Detroit.

ABBOTT MOTOR COMPANY

143 Waterloo Street, Detroit, Michigan



Coupe

All models will be exhibited at our Chicago Salesroom, Centaur Motor Co., 1725 Michigan Ave., during the week of the Chicago automobile show—Jan. 28th-Feb. 4th.



THE KNOBS WILL STOP YOUR SKIDDING

MORGAN & WRIGHT

NOBBY TREAD TIRES

The only tire ever produced which combines all the protection against skidding and drive slipping of the best tire chains with the wearing qualities of plain treads.

The big thick tough rubber knobs grip any kind of a road surface with bull-dog tenacity—yes, even wet, greasy asphalt pavements or roads covered with snow, mud or ice.

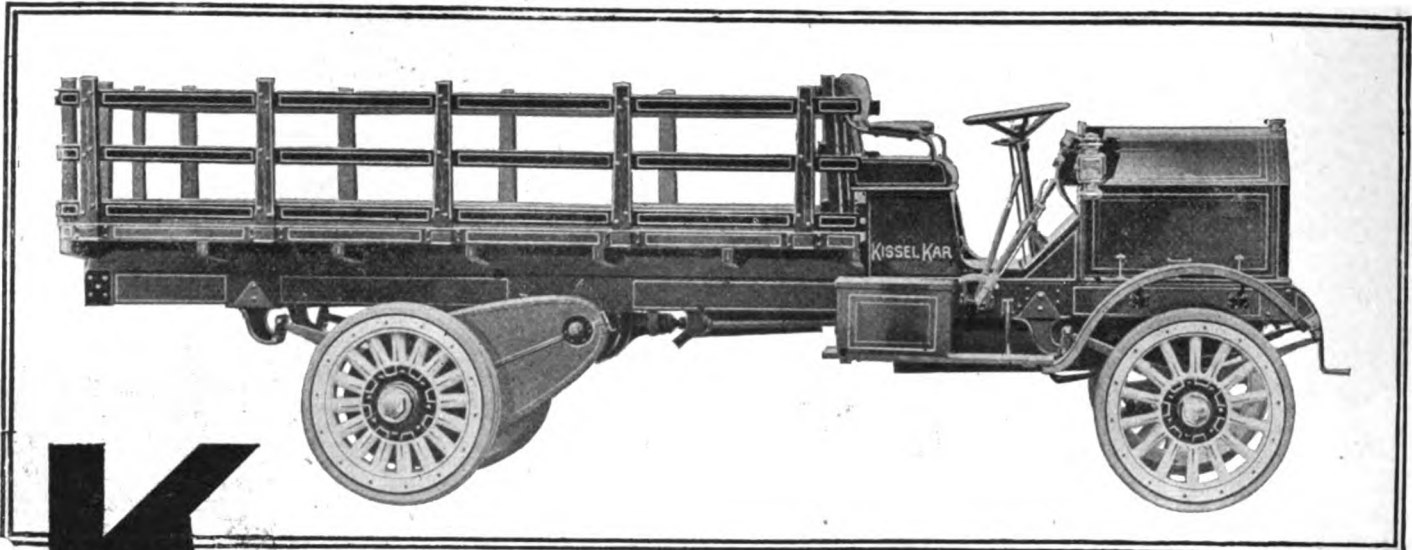
Nobby Treads will give absolute skidding protection that is always where you want it when you want it and will do away with the trouble, expense and excessive tire wear always attending the use of chains.

MADE IN
DETROIT

MORGAN & WRIGHT TIRES
ARE GOOD TIRES.

SOLD
EVERYWHERE





KISSEL KAR

3 TON TRUCK

The Truck with the patented lock on the differential, affording double rear wheel drive at will of driver.

Icy streets, muddy, slippery roads, and holes do not stall this truck, as so often happens with one wheel drive trucks.

If the traction wheel of this truck is revolving without traction, the driver simply uses the foot lever control, and by means of the patented lock on the differential, locks both rear wheels together, making a double rear wheel drive, the wheel on solid ground supplying the traction. This is a patented, exclusive feature of the Kissel Kar truck, and this feature alone, even if there were not other features, would make this the superior truck of greater dependability and utility.

15 per cent. to 20 per cent. More Economical of Fuel.

In the endurance run from Chicago to Milwaukee and return, the Kissel Kar established its superiority as a fuel saver, using from 15% to 20% less gasoline than the average. The Kissel Kar truck not only affords faster and more dependable delivery than average trucks, but accomplishes it at lower cost.

AT THE SHOWS

New York—Commercial Vehicle Section, Space 119-A; Chicago—Main Floor, Section D.

THIS, far more than average trucks, combines fast hauling ability with an absolute dependability, low operating cost and low maintenance, making it profitably adaptable in any use. The double wheel drive at will of driver makes stalling on ice, in holes or mud practically impossible. The universal joints in the distance rods equalize and distribute the strains when uneven roads bring the wheels out of level—the fourth geared up speed permits time saving without racing the engine when running empty; and the engine, with its simple design and self-contained, positively driven, practically self-regulating oiling-system, is fool-proof and absolutely dependable in heavy commercial work.

50 H. P.—\$3500—wheel base 144 inches; tread 68 inches; total length 230 inches; load space 6 ft. x 12 ft. 5 in.; speed on direct drive 10-12 miles per hour; on fourth speed, empty, 15 miles.

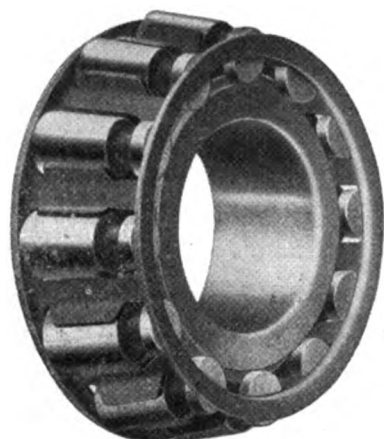
Write for catalog — liberal proposition to responsible dealers.

KISSEL MOTOR CAR CO.

Licensed under Selden patent.

**159 Kissel Avenue
HARTFORD, WIS.**

PROMINENT MOTOR CAR BUILDERS USING



Timken Roller Bearings

IN PART OR THROUGHOUT ON

THEIR 1911 MODELS

Pleasure Cars

Apperson Bros. Automobile Co.
Atlas Motor Car Co.
Autocar Co., The
Abbott Motor Car Co.
Bartholomew Co., The
B. C. K. Motor Co.
Babcock Co., H. H.
Cadillac Motor Car Co.
Chalmers Motor Co.
Columbia Motor Car Co.
Croxtton-Keeton Motor Co., The
Crawford Automobile Co.
Columbus Buggy Co., The
Coates-Goshen Automobile Co.
Canada Cycle & Motor Co., Ltd.
Carhart Auto. Corporation
Cunningham, Son & Co., James
Chautauqua Motor Co.
Case Motor Car Co.
Dayton Motor Car Co., The
Dorris Motor Car Co.
Durocar Mfg. Co., The
E-M-F Co., The
Franklin Mfg. Co., H. H.
Grout Automobile Co.
Great Western Automobile Co.
Haynes Automobile Co., The
Hupp Motor Car Co.
Haberer & Co.
Herreshoff Motor Co.
International Harvester Co.
Jenkins Motor Car Co., The
Kissel Motor Car Co., The
Knox Automobile Co.

Locomobile Co. of America, The
Lexington Motor Car Co., The
Marion Motor Car Co., The
Maxwell-Briscoe Motor Co.
Metzger Motor Car Co.
Mercer Automobile Co., The
McIntyre Co., W. H.
Maytag-Mason Motor Co.
Moyer, H. A.
Moline Automobile Co.
Midland Motor Co.
Moon Motor Car Co.
Matheson Motor Car Co.
National Motor Vehicle Co.
Nordyke & Marmon Co.
New York Taxicab Co.
Olds Motor Works
Owen Motor Car Co.
Packard Motor Car Co.
Peerless Motor Car Co., The
Pierce-Arrow Motor Car Co., The
Pope Mfg. Co.
Premier Motor Mfg. Co.
Palmer & Singer Mfg. Co.
Pullman Motor Car Co.
Reo Motor Car Co.
Royal Tourist Car Co., The
Stearns Co., The F. B.
Stevens-Duryea Co.
Speedwell Motor Car Co., The
Simplex Automobile Co.
Selden Motor Vehicle Co.
Smith Automobile Co.
Simplex Motor Car Co.
Stafford Motor Car Co.

Spoerers Sons Co., Carl
Sinclair-Scott Co.
Sears Motor Car Works
Schacht Motor Car Co.
Thomas Motor Co., E. R.
Terminal Taxicab Co. (of Wash-
ington, D. C.)
Velie Motor Vehicle Co.
Winton Motor Carriage Co.,
The
Westcott Motor Car Co.
Wilcox Motor Car Co., H. E.
Willys-Overland Co., The

Electrics (Pleasure)

Anderson Carriage Co., The
Babcock Electric Carriage Co.
Columbus Buggy Co., The
Kimball & Co., C. P.
Rauch & Lang Carriage Co.,
The
Waverly Co., The

Commercial Cars

American Locomotive Co.
American Motor Truck Co.
Atterbury Motor Car Co., The
Abendroth & Root Mfg. Co.
Auto Car Co., The
American La France Fire Eng.
Co.
Bartholomew Co., The
Commercial Truck Co. of Amer-
ica
Cass Motor Truck Co.

Franklin Mfg. Co., H. H.
Grabowsky Power Wagon Co.
Gramm Motor Car Co., The
General Vehicle Co.
Garford Motor Truck Works
Hart Kraft Motor Co.
Harrison Co., The Robert
Kelly Motor Truck Co., The
Knox Automobile Co.
Kopp & Co.
Kissel Motor Car Co.
Mack Bros. Motor Car Co.
Metzger Motor Car Co.
Morgan Co., R. L.
Oliver Motor Car Co.
Packard Motor Car Co.
Pierce-Arrow Motor Car Co.,
The
Pope Mfg. Co.
Packers Motor Truck Co.
Pennsylvania R. R. Co., The
Rapid Motor Vehicle Co.
Reliance Motor Truck Co.
Randolph Motor Car Co.
Reliable Auto Truck Co.
Robinson-Loomis Motor Car
Co.
Sampson Mfg. Co., Alden
Schurmeir Wagon Co.
Seagrave Co., The
Sternberg Mfg. Co.
Schacht Motor Car Co.
Victor Motor Truck Co.
Wilcox Motor Car Co., H. E.

Manufacturers Using Timken Bearings in Transmissions on 1911 Models

Apperson Bros. Automobile Co.
Atlas Motor Car Co.
Babcock Co., H. H.
Cunningham, Sons & Co., James
Case Motor Car Co.
Dayton Motor Car Co., The
Dorris Motor Car Co.
Gramm Motor Car Co.

Great Western Automobile Co.
Haynes Automobile Co., The
Imperial Automobile Co.
Knox Automobile Co.
Mercer Automobile Co., The
Moline Automobile Co.
Midland Motor Co.
Olds Motor Works

Rapid Motor Vehicle Co.
Reliance Motor Truck Co.
Schurmeir Wagon Co.
Selden Motor Vehicle Co.
Speedwell Motor Car Co., The
Schacht Motor Car Co.
Velie Motor Vehicle Co.
Westcott Motor Car Co.
Wilcox Motor Car Co., H. E.

Transmission Builders

Auto. Parts Mfg. Co.
Brown-Lipe Gear Co.
Brownell Motor Co., F. A.
Model Gas Engine Works
Superior Machine Tool Co.
Warner Gear Co.
Warner Mfg. Co.
Wabash Gear Works.

Axle Makers

Timken-Detroit Axle Co. use Timken Roller Bearings exclusively

TIMKEN ROLLER BEARING CO., Canton, Ohio

This "Ad" is Directed to **Automobile Engineers Only**

AUTOMOBILE SCREW MACHINE PRODUCTS

WE ADDRESS THE ENGINEER because he it is who must specify the quality of the materials to be used in the car he is designing—he alone knows the difference between quality and mediocrity in machined parts.

EXPERIENCED ENGINEERS KNOW there's nothing cheap about roughly done work—carelessly finished parts. Every part must register exactly, else the losses in assembling will be beyond computation. Perhaps you have had experience with that kind—made on old, half-worn machines by concerns that haven't yet caught up with the times.

OUR SPECIALTY IS QUANTITY orders where quality is the first requisite. We do not pretend to compete on ordinary, slipshod work—we are especially equipped for the highest grade of work and in that we acknowledge no peer.

OUR SCREW MACHINE DEPARTMENT is equipped with the latest type of four-spindle automatics, invented and designed by our Mr. John J. Grant—known the world over as the father of automatics and ball-making machines. We therefore have a great advantage over those concerns—and they are the next best—which use Grant machines of earlier models. We have the latest products of Grant's inventive mind—and we have Grant himself. Being a Manufacturing Engineer, you know what that means.

OUR CAPACITY IS LARGER than that of any other save possibly one. We have a Million Dollar Equipment—up-to-the-minute in every detail.

PRECISION WORK — TO ANY DEGREE OF ACCURACY is the kind we solicit. The better you know what you want the more surely can we satisfy you.

SEND US YOUR DRAWINGS and specifications. Tell us how many of each part—we'll get together. We'll accept small orders, but of course we can do better on quantities.

DELIVERIES—THAT'S IMPORTANT. We do not accept business beyond our capacity—if we take the order we will not disappoint you on deliveries.

HIGH GRADE, HIGH DUTY STEEL BALLS

ARE YOU IMPORTING STEEL BALLS from France or Germany or elsewhere? Some concerns still are, you know.

PARDON US FOR SPEAKING BLUNTLY, but there's only one way to express it—and we want to put you right for our mutual benefit—the only excuse for importing steel balls today is ignorance of the fact that we make not as good, but better balls in America now than any European concern can furnish.

BETTER STEEL, BETTER TREATMENT, more accurately ground—consequently stronger and more durable.

WE FULLY APPRECIATE the significance of that last paragraph and we know you will doubt it unless you are up to the minute informed on this matter. So we stand ready to prove it to you by any test you can suggest.

DO YOU KNOW that the French and German and English balls you have been importing and paying so heavily for are made—every one of them—either on machines invented by our Mr. John J. Grant, or crude imitations of Grant machines. Didn't know that? Well, look up the history of the ball business, then remember that Grant's latest ball-grinding machines are ten years in advance of his former ones.

NOW, WHAT WAS THE REASON American makers did not make better balls formerly? Simply lack of demand. The automobile business has changed that. Today there is a demand for round balls made to one ten thousandth of an inch accuracy. We make that kind—absolutely round balls—absolutely accurate as to size.

THE PROGRESS IN STEEL MAKING and heat treatment in America has been simply wonderful in the last three or four years—thanks to the automobile which demanded the best. We now have our steels made to our own analyses. We have facilities for heat treating that eliminates all tendency to distort and which produce high-duty balls of absolutely uniform quality.

YOU WILL IMPORT NO MORE BALLS after you have compared ours with the best you can buy, at any price, abroad, and, since the duty is very high on balls, and our methods the most scientific and economical, you will save money by buying the best hereafter—Grant-made balls.

Grant & Wood Manufacturing Company
CHELSEA, MICHIGAN

**The Basis of Tire Value is Ton Miles, Successful
Operation of Commercial Motor Cars
Lies in Economical Upkeep.**

Diamond

**Wire Mesh Base—Solid Rubber Clincher
and Side Wire Types**

TIRES

Mean Just This

Spliceless construction, time-tested, exclusive and Diamond Quality in every type. Backed by years of successful performance and scientific development.

**We Guarantee Satisfaction and Our
Name is on Every Tire.**

It is the Strongest Guarantee Possible.

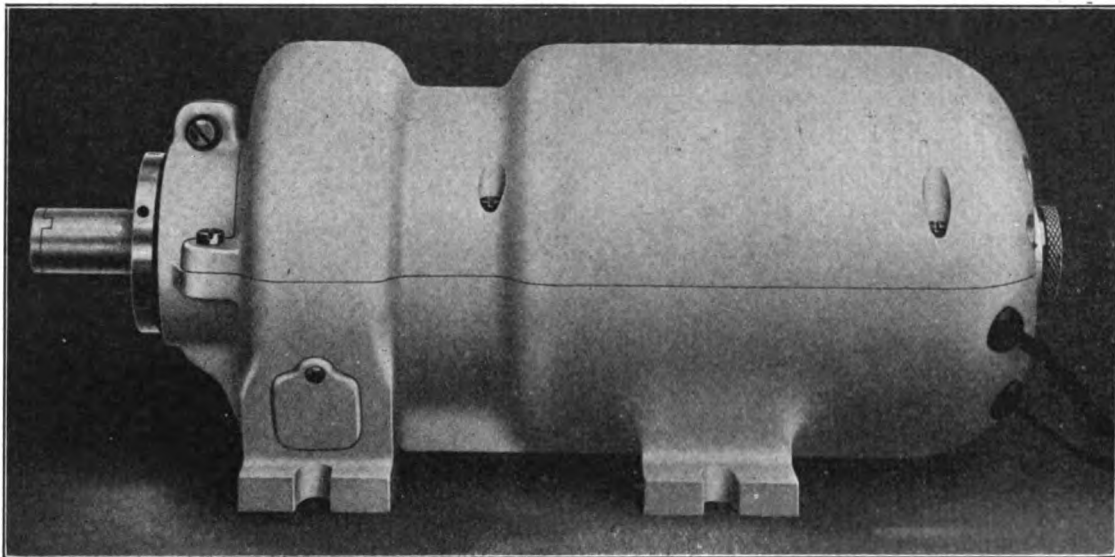
SERVICE STATIONS we are now opening in upwards of 50 cities—Brooklyn, Albany, Newark, Rochester, Syracuse, &c.—will give the commercial car dealer and user most valuable facilities. No waiting for stock. No delayed claims.

THE DIAMOND RUBBER CO., Akron, Ohio

"No question but that electric lighting of automobiles is coming fast."

This opinion, delivered by the chief of the experimental department of one of America's most noted makers, voiced the general sentiment of the trained observers who were present at the show to note the tendencies of the times.

The engineer quoted might have safely gone further and said that electric lighting of automobiles was already an *accomplished fact*.



DYNAMO SYSTEM TYPE "C"
One-half life size. Weight complete, as shown, 19½ lbs.

Gray & Davis Dynamo System is responsible for it.

Nothing at the show compared in point of interest with the Gray & Davis exhibit where the system was demonstrated in actual operation day and night and eagerly inspected by throngs of interested automobilists. Critical examination was followed by unqualified indorsement. The neat, compact form of the dynamo, the efficiency of the system employed and the visible results all came in for the highest commendation. The superiority of electric lighting was firmly established for once and all.

It now looks as though we would be unable to care for but a fraction of the demand that has arisen, and we now give fair warning to those who would enjoy the most modern luxury of motoring to forward their order without delay. First come, first served.

GRAY & DAVIS, Manufacturers of Automobile Lamps **Amesbury, Mass.**

Undisputed Leadership

for

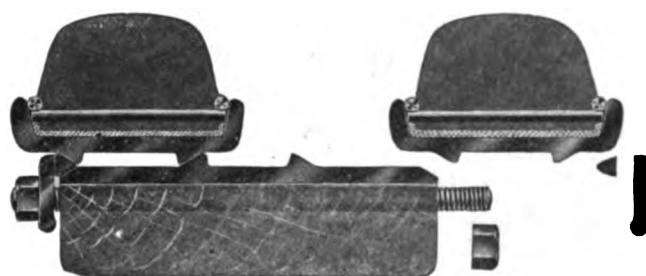
"Firestone"

SIDE-WIRE TIRES—THE WORLD'S STANDARD

MORE THAN TWICE as many as nearest competing make are equipped to vehicles at the New York Truck Show. 20 per cent. more than the nearest two combined. The usual preference since shows began. The usual recognition of Firestone superiority in actual service.

ONE YEAR AHEAD of all others, the Firestone company has the only quick removable rim for solid rubber tires in actual use on exhibiting vehicles. This time-tried and proven equipment will

Prevent Laying Up Your Trucks for Tire Repairs



Firestone QUICK REMOVABLE Side-Wire Tires

Call and see this new equipment at the New York Truck Show and the Chicago and Boston Auto Shows.

THE FIRESTONE TIRE & RUBBER COMPANY

"America's Largest Exclusive
Tire and Rim Makers"

Akron, Ohio

**Sales and Applying Stations
in Over 100 Cities**

McKim Copper Asbestos Gaskets

¶ The standard gasket with automobile engineers, ALWAYS, because they are the only reliable packing for gas engine flanges. Are made solely by

McCORD MFG. CO.
Detroit

ALL SIZES AND SHAPES IN STOCK
IMMEDIATE SHIPMENTS—LOWEST PRICES

SEE OUR EXHIBIT AT THE CHICAGO SHOW

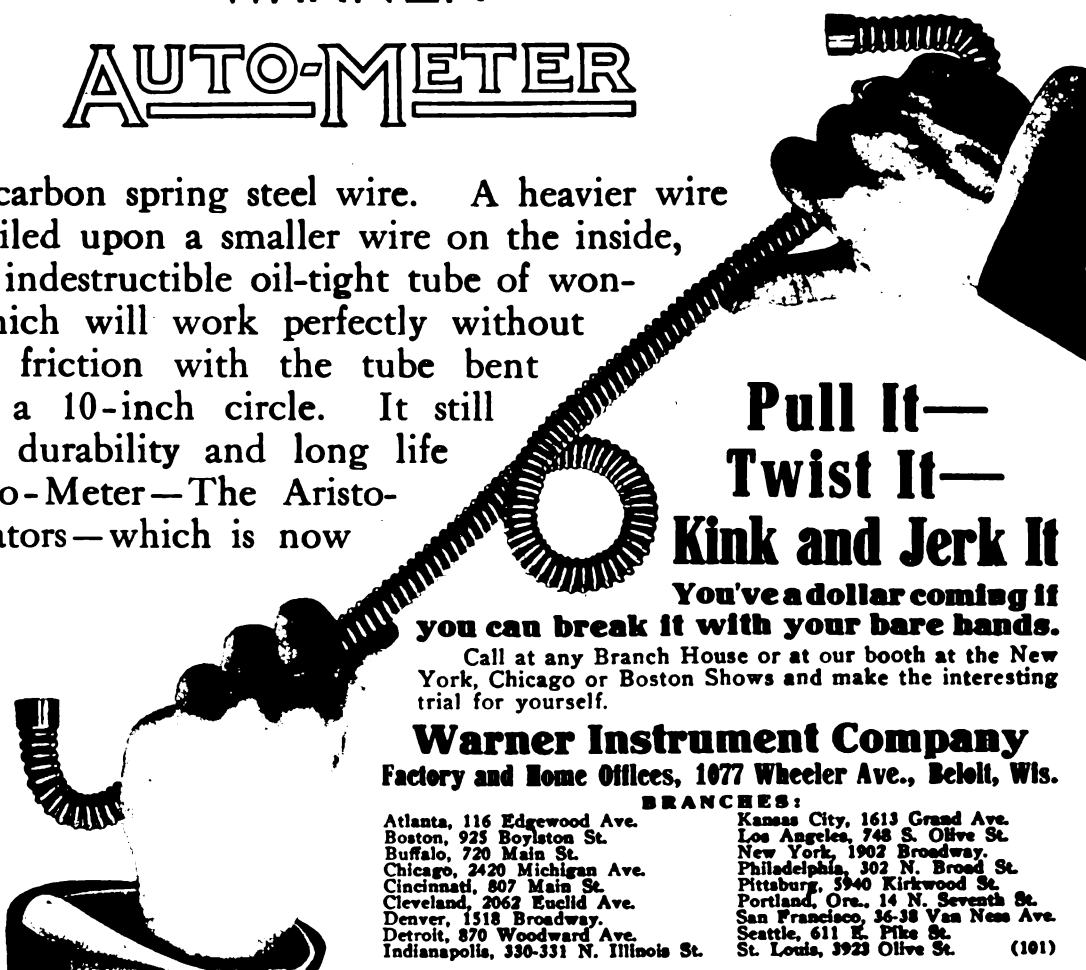
Earn a Dollar in a Few Seconds

There is a big, round dollar waiting for any automobile owner who can break the new flexible driving shaft of the Warner Auto-Meter, using the hands alone. No one has ever yet done it without using a sledge or a heavy vise—and this has only dented it. This Samson-like shaft **wipes out shaft troubles entirely.** These have never amounted to much on the Warner—but they were the only troubles the Auto-Meter has ever had, bar accidents or abuse.

The New, Unbreakable Driving Shaft of the

WARNER AUTO-METER

is made from high carbon spring steel wire. A heavier wire on the outside is coiled upon a smaller wire on the inside, making a practically indestructible oil-tight tube of wonderful flexibility, which will work perfectly without jamming or undue friction with the tube bent into a segment of a 10-inch circle. It still further adds to the durability and long life of the Warner Auto-Meter—The Aristocrat of Speed Indicators—which is now in use on at least 90% of all pleasure vehicles costing \$2,000 or more, and is the invariable choice of the auto owner who can afford its purchase.



**Pull It—
Twist It—
Kink and Jerk It**

**You've a dollar coming if
you can break it with your bare hands.**

Call at any Branch House or at our booth at the New York, Chicago or Boston Shows and make the interesting trial for yourself.

Warner Instrument Company
Factory and Home Offices, 1077 Wheeler Ave., Beloit, Wis.

BRANCHES:

Atlanta, 116 Edgewood Ave.
Boston, 925 Boylston St.
Buffalo, 720 Main St.
Chicago, 2420 Michigan Ave.
Cincinnati, 807 Main St.
Cleveland, 2062 Euclid Ave.
Denver, 1518 Broadway.
Detroit, 870 Woodward Ave.
Indianapolis, 330-331 N. Illinois St.

Kansas City, 1613 Grand Ave.
Los Angeles, 748 S. Olive St.
New York, 1902 Broadway.
Philadelphia, 302 N. Broad St.
Pittsburg, 5940 Kirkwood St.
Portland, Ore., 14 N. Seventh St.
San Francisco, 36-38 Van Ness Ave.
Seattle, 611 E. Pike St.
St. Louis, 3923 Olive St. (101)



Another Splitdorf Triumph

THE GREATEST NON-STOP AUTOMOBILE RUN IN THE HISTORY OF MOTORDOM

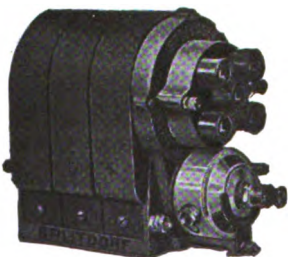
10,872 miles without stopping the motor, over country and city roads, just completed at Los Angeles, Cal., by a Flanders car equipped with

SPLITDORF MAGNETO and Common Sense Plugs

Think of it! 29 days of continuous running, and Absolutely Perfect Ignition during the entire time—not a single miss in the whole run.

No Magneto in the world has ever shown such Efficiency, Perfect Operation and Enduring Service.

This is the result of SPLITDORF Quality—the real reason why SPLITDORF Ignition is so deservedly popular among motorists everywhere.



Please write for Magneto catalog.

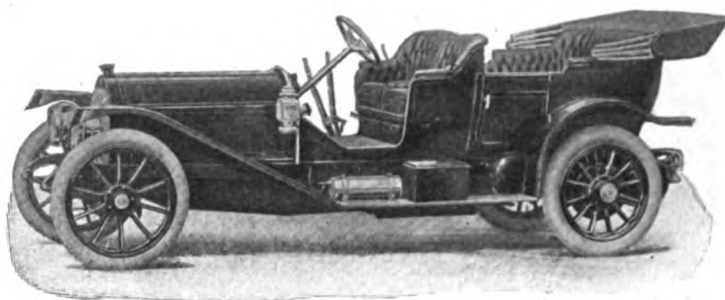
Chicago: 319 Michigan Ave.
San Francisco: 520 Van Ness Ave.
Detroit: 868 Woodward Ave.
Boston: Motor Mart.
Los Angeles: 1226 S. Olive St.

C. F. SPLITDORF **Walton Ave. and 138th St. New York**

BRANCH, 1679 BROADWAY

PALMER-SINGER

(Built in New York City)



Strongest Built Car in the World

**A SIXTY HORSE-POWER CAR
AT 40 HORSE-POWER PRICE**

WHEN we say 60 horse-power, we mean that a Palmer-Singer develops sixty horse-power under all conditions—sixty horse-power under first speed or under fourth speed.

The Palmer-Singer sixty horse-power touring model is the strongest built car in the world—six-cylinder—four-speed transmission—multiple disc clutch—Motor, bore $4\frac{7}{8}$ inches, stroke $5\frac{1}{2}$ inches—wheel base 138 inches; any other car with anything like this mechanical construction could not be purchased for less than 50% higher price.

The sale of a car is the inception of our responsibility. We stand sponsor for its faithful performance and for its perfect construction throughout. This guarantee of service is made in true earnestness—it is made per-



sonally by the men who build the Palmer-Singer—men of the highest responsibility. Our literature tells about, and illustrates Palmer-Singer 1911 series, it is interesting—a postal will bring it to you.

Palmer & Singer Manufacturing Company

(Licensed under Selden Patent.)

Long Island City, N. Y.

1620 Broadway, New York.

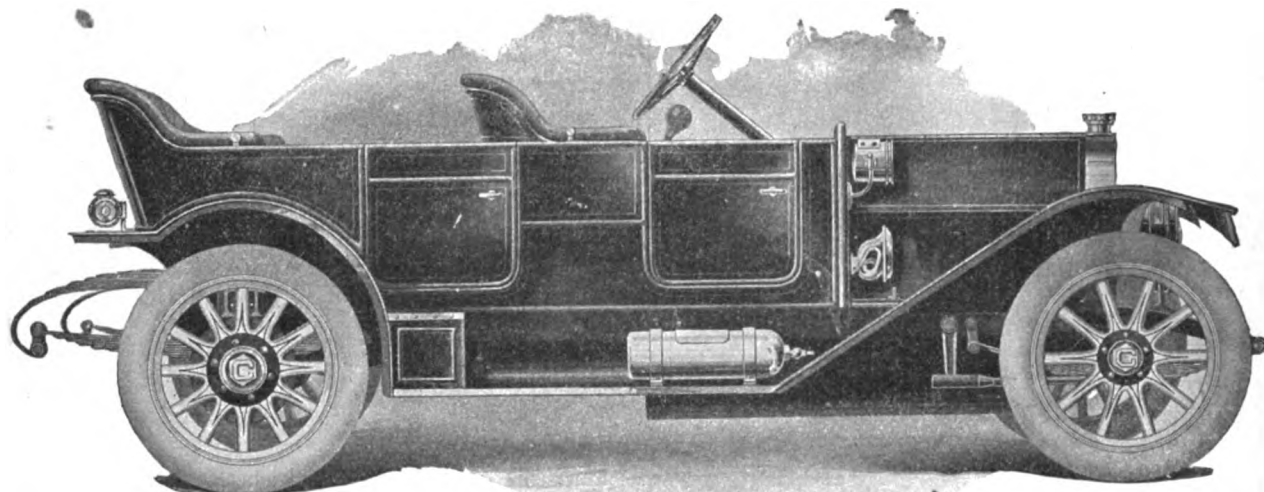
1321 Michigan Ave., Chicago, Ill.

Ed. M. Fowler, Western Sales Manager, 533 Van Ness Ave., San Francisco, Cal.

In line with our guaranteed service policy, we are now making some radical changes in many of our agencies. We invite correspondence with prospective representatives of high standing—those who can conduct our business along the highest class lines and not only make, but keep thoroughly satisfied owners.

THE COLBY \$1750

Built to Compete with \$3000 Machines



SPECIFICATIONS

Body: Standard touring straight line. Seating capacity, five. Fore-doors.

Motor: Four Cylinder—H. P., 35-40. Bore, 4 $\frac{1}{4}$; stroke, 5 $\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.

Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.

Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system.

Carburation: Carburetor—special fuel feed—gravity.

Clutch: Type—multiple disc. Friction surfaces—steel to steel.

Gearset: Selective—located amidship. Three speeds forward.

Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.

Bearings: Crankshaft—three large, plain. Camshaft—three, plain. Clutch—spindle, plain. Clutch—thrust, ball. Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball. Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white brass.

Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36x4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type. Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.

Demountable Rims:

Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.

Control: Hand levers on steering wheel and foot accelerator.

Price: \$1,750, f. o. b. Mason City.

Vital Points of Real Superiority

Big and powerful in appearance, real 1911 fore-door body (not 1910 body with fore-doors added), long, straight lines—superior finishing and equipment.

Big power back of the appearance. 40 full horsepower—enough to take you anywhere, over any country, in any weather, without strain to yourself or your car.

Extra long wheelbase—121 inches—insuring the maximum of roominess and easy-riding qualities.

Big wheels with 36-4 inch tires—a further guarantee of easy-riding and reduced cost of maintenance.

Demountable Rims—if you knew what a wonderful convenience these were, you wouldn't consider the ordinary kind on your car.

A price that marks a revolution in car values—\$1750.

These, in addition to marked superiority of design, material and workmanship, take the Colby entirely out of the field of competition, either with other cars of its price, which cannot approach it in quality, or other cars of its quality, which are *never* sold at its price.

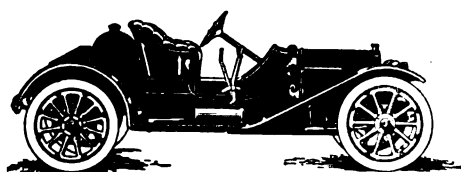
Our 1911 output is limited. We therefore advise an early investigation and reservation of territory.

Watch for us in the Coliseum basement—Booth No. 3—at Chicago from January 28 to February 11.

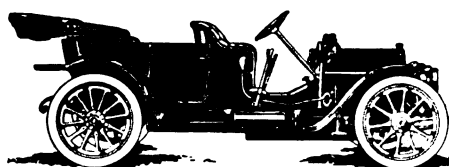
COLBY MOTOR COMPANY, Mason City, Iowa

1911 Bergdoll

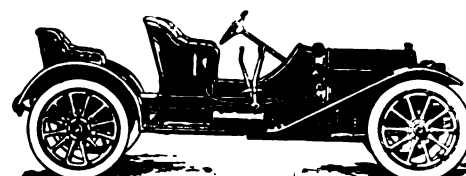
BACKED BY MILLIONS "30"



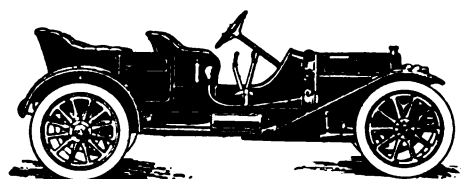
"LOUIS J." RUNABOUT, \$1,600



TOURING CAR, \$1,500



ROADSTER, \$1,500



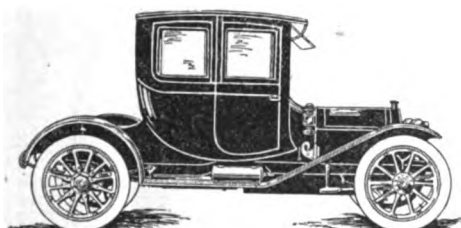
TOY TONNEAU, \$1,600

IN offering our 1911 car for the public's approval we are doing so after two years of experimental work, embodying in a popular priced car all the practical features and advantages of the best foreign and domestic development.

In design and construction the Bergdoll "30" is simplicity itself and will give the reliability, efficiency and comfort of cars of double its market value. In manufacturing nothing has been forsaken that has proven its worth and we have adopted nothing without the most relentless tests. It is not remarkable in any one particular at the expense of all others and will meet the reasonable requirements of the average automobilist.



"4 DOOR" TOURING CAR, \$1,600



COUPE, \$2,000

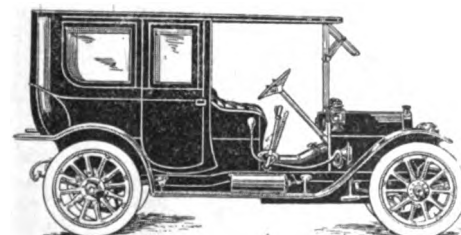
Contrary to the customary rule of building from one to three experimental cars, we built fifty of these machines and put them into taxicab service and they were turned over to inexperienced operators. These cabs at this writing have covered from seven to ten thousand miles with the best results.

One of the strongest claims which we make to any prospective buyer of our product is that we recognize our obligations to that customer as early beginning when he contracts for one of our cars, and we make every possible effort to care for each owner and see that he continues to obtain from his cars the satisfaction that he is entitled to.

We consider the buyer the "court of last resort," and from his decision as to the merit of our car there is no appeal. The satisfied owner is the best salesman, and it is our hope to have fifteen hundred persons this coming season involuntarily selling Bergdoll "30's" to their acquaintances by explaining the points of superiority and proudly demonstrating their efficiency.



COLONIAL COUPE, \$2,500



LIMOUSINE, \$2,500

Louis J. Bergdoll

President.



TOWN CAR, \$2,600

DELIVERIES ARE BEING MADE ACCORDING TO SCHEDULE

Complete Description and Specifications Appear in Our Advance Folder.

LOUIS J. BERGDOLL MOTOR COMPANY

31st and Dauphin Streets

Department "S"

PHILADELPHIA, PENNA.



THE SLEDEN CAR

MADE BY THE FATHER OF THEM ALL

We Want Dealers who are Working for the Future

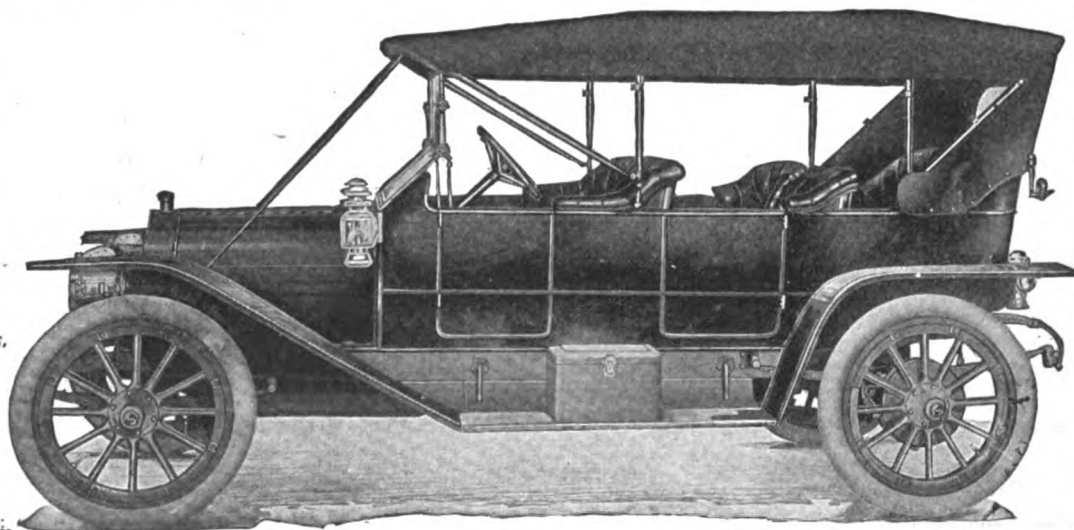
The five models of Selden cars for 1911, on two distinct chassis, ranging from \$2250 to \$2600, offer a line to meet every whim of every buyer. ¶ The new four and six passenger torpedo cars stand alone at the top of the line in competition with any torpedo, at any price. ¶ These are the new additions to the regular five and seven passenger cars which made good last year and which, with a few refinements, will be our standard line this year. ¶ Every sold Selden car is a valuable asset to the dealer who sells it. ¶ Remember when you sell Selden cars that you are selling the car made by the man who invented the automobile—George B. Selden. Every automobile in the world is an adoption of his idea. ¶ Naturally Selden has the bulge on every other maker because not only did he perfect the automobile, but he spent 25 years in developing the first one—long years before any of the present day manufacturers even thought of building an automobile. The factory guaranty back of Selden cars is not equalled by any maker in its broadness and liberality.

Selden Motor Vehicle Company

Licensed under Selden Patent

ROCHESTER

NEW YORK



UNISPARKER

Dealers and Repair Men

are invited to examine the UNISPARKER
at our Space, No. 134, Chicago
Automobile Show.



We have said much about the simplicity and unfailing regularity of the UNISPARKER'S action. Its remarkable performance is due largely to its positive single spark contact, which eliminates the magnetic trembler.

Though easy to understand, the UNISPARKER is less easy to describe. Therefore we invite shop and garage men especially to visit us at the Shows and see for themselves just how it works and why it does what we claim.

You are frequently asked for advice regarding ignition equipment. It is to your interest to advise your customers well. You cannot afford not to know the UNISPARKER. COME!

We shall exhibit at the Chicago and Boston Shows, as well as at New York.

ATWATER KENT MFG. WORKS

PHILADELPHIA., PA.

The Largest Automobile



THE CELEBRATED Brampton Chain

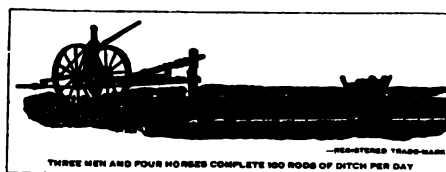
is the Strongest Chain in the World

Price the Same as Other Chains

THE Brampton Chain

is not only used on Motor Cars, Motorcycles, Bicycles and Aeroplanes, but also on Machinery of all kinds.

**All Standard Sizes
in Stock.**



H. M. FISK,

Solicitor and Contractor
For Tile Draining.

Manufacturer of The Only Successful Rapid Tile Laying Machine on

Dec. 10/10/1911
PELLA, IOWA

Chas. E. Miller, 121 Chambers Street N Y.

Dear Sir,

I have your letter of 20th inst., stating you had shipped 3 1/2 pitch, Brampton Roller Chain. You ask what we use said chain for. I send you two Photos of Machine upon which we use said chain. Drum 22 inches diameter, Sprocket 39 inch diameter, draft 57 tons, at highest tension, the chain has run three summers without perceptible wear, and we think it a dandy.

Yours very truly,

H.M.Fisk.

We are the Sole American Agents. Catalog on request.

CHAS. E. MILLER, Manufacturer, Jobber
Exporter and Importer

Philadelphia, Pa.

Boston, Mass.

Brooklyn, N. Y.

Cleveland, O.

Hartford, Conn.

Springfield, Mass.

Supply House in America



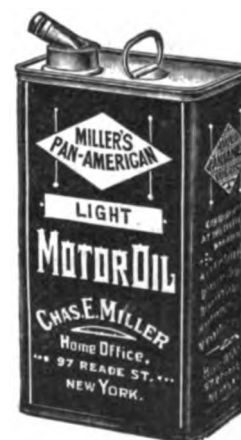
Saves Power

Saves Wear



Saves Time

Saves Money



Miller's Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Miller Pan-American Gear Case Compound

Made in Three Densities—Light, Medium, Heavy

All have a low cold test and high melting points and retain their various consistencies at varying temperatures.

In order to convince you of the efficiency of these lubricants we are willing to make you a SPECIAL PRICE for an initial order, much lower than usually quoted on other high-grade oils and greases.

AGENTS WANTED IN UNOCCUPIED TERRITORY.

HOME OFFICE

97-103 Reade Street
and 121 Chambers Street

New York City

Detroit, Mich.

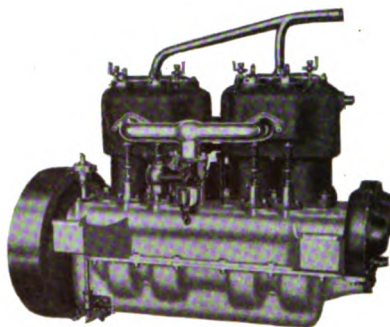
Buffalo, N. Y.

Atlanta, Ga.

New Orleans, La.

54th St. and Eighth Ave., New York City.

These new motors will make their first appearance at the Chicago Automobile Show, Space 65.

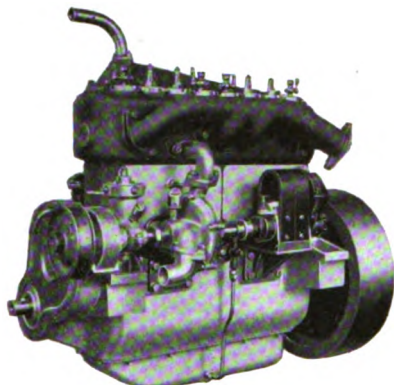


Model "T"

Cylinders 5 x 5 1/4 inches. Cast in pairs. "T" head type with main frame construction. Special automatic oiling system, liberal bearings, large valves and other notable features.

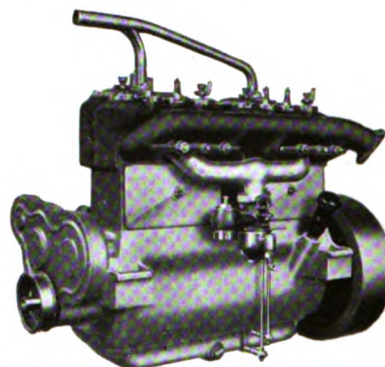
This model of motor will be furnished 5 1/4 x 5 3/4 size.

The up-to-date features and attractive prices are sure to interest the most critical manufacturers.



Model "O"

Cylinders 4 1/2 x 5 1/4 inches, cast en bloc. "L" head type, furnished in main and subframe construction. Also supplied in complete unit power plant, using multiple disc clutch and selective type transmission. This motor will also be supplied in 3 1/4 x 5 1/4 inch size.



Model "E"

Cylinders 4 1/2 x 5 1/4 inches, cast in pairs. "L" head type, supplied in both main and subframe construction. This motor can be had in complete unit power plant, using multiple disc clutch and three speed selective type transmission.

**1912
Standard**

CONTINENTAL MOTORS

The superiority of the CONTINENTAL product has been generally recognized for many years past and the progressive pleasure and commercial vehicle manufacturers cannot afford to overlook the many approved of features found in these new models. Blue prints and full particulars will be sent upon request.

Continental Motor Manufacturing Co.
MUSKEGON, MICHIGAN

**Contract Now
for Your 1912
Requirements.**

Factory Representative
K. F. PETERSON
150 Michigan Ave.
CHICAGO, ILLINOIS

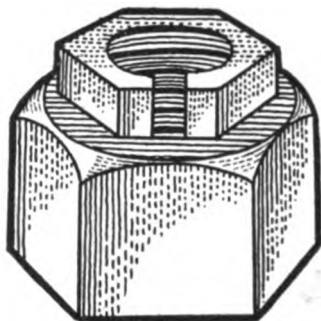


Sample motors will be shown at the Chicago Automobile Show only, Space 65, Coliseum Gallery.

Factory Representative
L. D. BOLTON
1610 Ford Building
DETROIT, MICHIGAN

IMPROVED COLUMBIA LOCK NUTS

FINEST KIND OF
AUTOMOBILE
INSURANCE



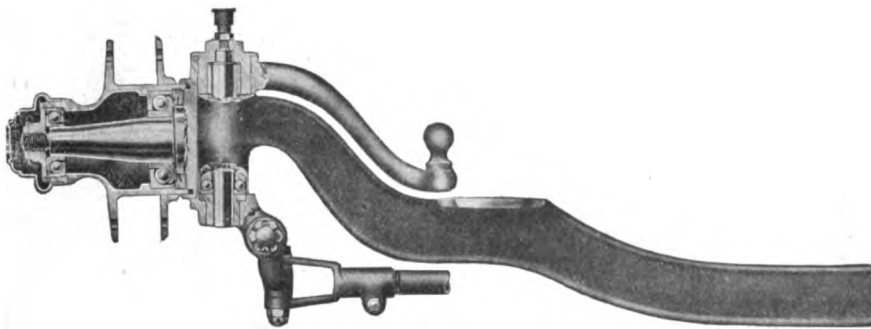
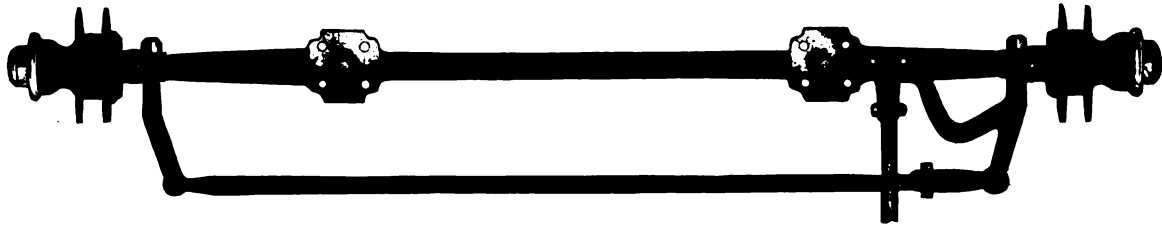
GUARANTEE
SAFETY IN
MOTORING

THE GREATEST RAILROADS ARE AMONG THE
LARGEST USERS OF IMPROVED COLUMBIA
LOCK NUTS.

See Us at Space 154, Madison Square Garden

Columbia Nut and Bolt Co.
BRIDGEPORT, CONNECTICUT

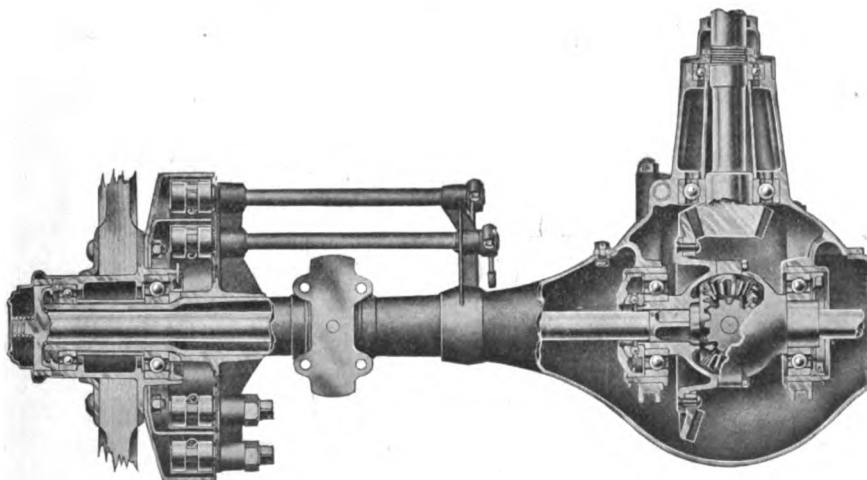
THE McCUE AXLES



Front Axles

LEMOINE AND ELLIOTT TYPES

Spring seats from 28" to 30"; drop from $\frac{7}{8}$ " to 4". Made of alloy and carbon steels, all weights.



Full Floating Rear Axle

Housings—one piece sheet steel, heat treated.

Floating axle with hub clutch forged integral. No welds or upsets.

Pinion Gear—integral with pinion shaft, made of alloy steel and carefully treated.

Bearings—imported annulars.

Drums—4, having flange bearing surfaces and braking surfaces carefully machined—making real brakes possible.

EVERYTHING entering the construction of these axles, including workmanship, is the best obtainable. They are made for service.

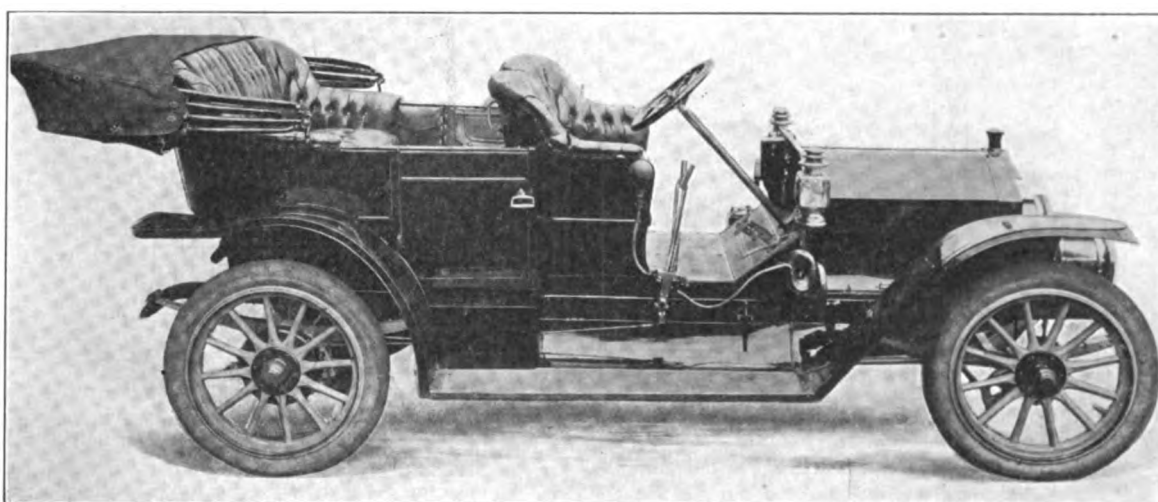
When you see a car with a McCue axle it is evidence of good construction all through.

THE McCUE COMPANY

Hartford, Connecticut

We will exhibit at Chicago, Coliseum Show; and Boston, Mechanic's Pavilion.

Pullman 1911



Unexcelled Intrinsic Values Unexcelled Wearing Qualities

NINE MODELS, \$1650 TO \$4000; 30 TO 50 HORSEPOWER

PULLMAN POPULARITY is due to the fact that the car is built on the principle that use is the best test. We can show you cars that have gone 90,000 miles and are still going. Their performances prove their perfection. The aim of the Pullman Company since its inception has been not to introduce radical and revolutionizing ideas but to build the best automobile possible. It has striven to not only keep abreast of the times but to so equip and manage its entire organization that Pullman automobiles could be manufactured and sold more advantageously than any other car.

Our complete line will be on exhibition at the Coliseum Show, Chicago. Many Pullman agents will be there whom you should know. They who sell our cars are the best qualified to speak of the agency proposition.

We want RESPONSIBLE, ESTABLISHED, PROGRESSIVE DEALERS to represent us in UN-ALLOTTED TERRITORY, particularly in the following cities—Pittsburg, Pa.; Cincinnati, O.; Louisville, Ky.; Memphis, Tenn.; Indianapolis, Ind.; Detroit, Mich.; Des Moines, Iowa; Omaha, Neb.; Denver, Colo.; Milwaukee, Wis.; and in many points throughout Texas and the Southwest.

PULLMAN MOTOR CAR COMPANY, Drawer W, York, Pa.

Licensed under Selden patent.

Three Torpedo Touring Car

Inter-State

Here is but a partial description of three Inter-State Models, the cars that today continue to be the biggest sensation in all motordom for real value. High quality motor-car building at fair and logical cost is the answer.

Model 30A

Inter-State "40" Touring Car — \$1,750

This dependable car has established the Inter-State reputation for excellence of design, materials and performance.

Model 34A

An Inter-State "40" Torpedo-Touring Car — \$2,000

Special Equipment

This car is shown below. It is of the same power and quality as the \$1,750 car, but with the newest type of torpedo body. In developing our Torpedo models, we had the high ideals before us of producing the classiest looking machines of this type offered by any maker, irrespective of price. The appealing symmetry and beautiful outline of the Inter-State Torpedo models have attracted immense enthusiasm. The departure from the box type has been effected to give the cars the most graceful appearance.

Special equipment consists of two Solar gas headlights, with Prest-o-Lite tank. Combination oil and electric side lamps and combination oil and electric tail lamp. One special storage battery for lighting. Exhaust horn, tire irons on side, foot and robe rail attached. Large combination tool and battery box on one side, leaving other side free for accessories. Upholstered in the best selected, long grained, hand-buffed leather.

The following brief description applies to both \$1,750 and \$2,000 models:

118 in. wheel base, 56 in. tread, L-head, 4-cylinder motor, most economical in gasoline consumption, $4\frac{1}{2}$ in. bore, 5 in. stroke. Wonderfully perfected valve system, 2 distinct ignition systems, U. & H. high-tension magneto. Constant splash lubrication. Unit construction transmission and clutch. Noiseless gearset of greatest wearing quality.

Model 35

Inter-State "50" Torpedo-Touring Car — \$2,700

Completely Equipped

Contains all the carefully worked-out features of the Inter-State "40" with added power and passenger capacity and with latest torpedo body lines. 124 in. wheel base, T-head, 4-cylinder motor, developing 50 h. p. at normal speed of 1,200 revolutions per minute, $4\frac{3}{4}$ in. bore, $5\frac{1}{2}$ in. stroke, crank shaft of specially forged alloy steel, unit construction transmission and clutch of large dimensions. Rear axle of Inter-State full-floating type. A dozen other features distinctive of only the best built cars.

Write Now for Latest Catalog

Our free catalog tells a bright, comprehensive story of the above models and other cars built in our factory. It further explains our high-quality, sane-price idea. Drop a postal or note for the catalog today.

See Us at the
Auto Shows

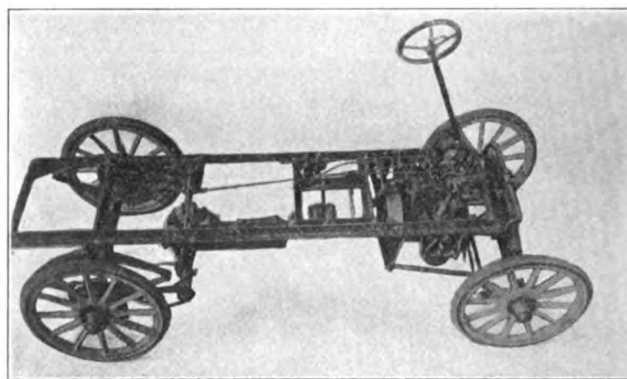
Chicago: Coliseum Annex, P-1
Boston: Mechanics Bldg., Spaces 136, 142

Inter-State Automobile Co.

Muncie, Indiana

(67)

Licensed Under Selden Patent



WHERE THE MONEY GOES— Repairs

It costs from \$25 to \$50 to tear down the average truck, clean and examine its parts and re-assemble—exclusive of the actual work of repairs. It costs more to get at the defective part than it does to make it right—BECAUSE OF THE WAY THEY ARE PUT TOGETHER.

Economy trucks will save 75% of your repair bills—BECAUSE OF THE WAY THEY ARE PUT TOGETHER—Unit assembly.

Economy engines can be entirely removed or replaced in 45 minutes; transmissions in 35 minutes; radiators in 15 minutes, and jack-shafts in 20 minutes, either part without disturbing the other two and all without disturbing the body.

CONVENIENT? Nothing like it on the market.

ECONOMICAL? After all, it is not the first cost, but the repairs and up-keep that staggers the owner.

The Economy elements are the best the market affords; Davis motors, Ball transmissions, Muncie jack-shafts, Tut-hill springs, Sheldon axles, Hayes wheels, Long radiators and Foster steering gears.

Bodies to suit your requirements.

The Economy truck is not the development of an engineer's idea; it is the result of experience. It is built from the users standpoint. We've been at it four years.

Two capacities only, 1000 lbs. and 2000 lbs.

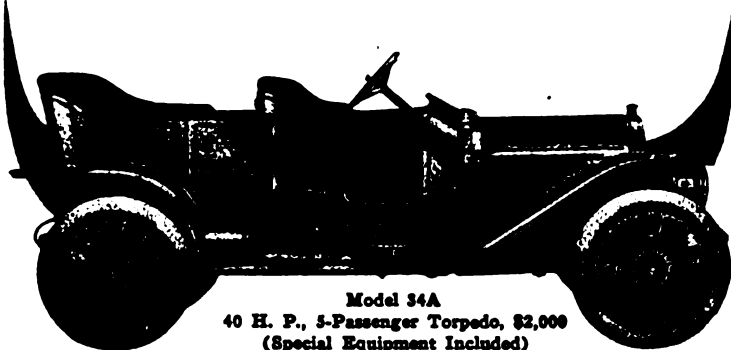
We would like to correspond with garage and repair men with the object of establishing Economy Maintenance Stations.

We do not require the purchase of a demonstrator.

ECONOMY MOTOR CAR COMPANY

Bissel and Cass Sts.

JOLIET, ILL.



Model 34A

40 H. P., 5-Passenger Torpedo, \$2,000
(Special Equipment Included)

THE NEW STEWART

Speedometer has aroused the interest and called forth the approbation of hundreds of factory owners and managers. We are adding every day to our list of car manufacturers using Stewart Speedometers as standard equipment.

“Quality”

is the explanation of the unprecedented activity in our immense plant.



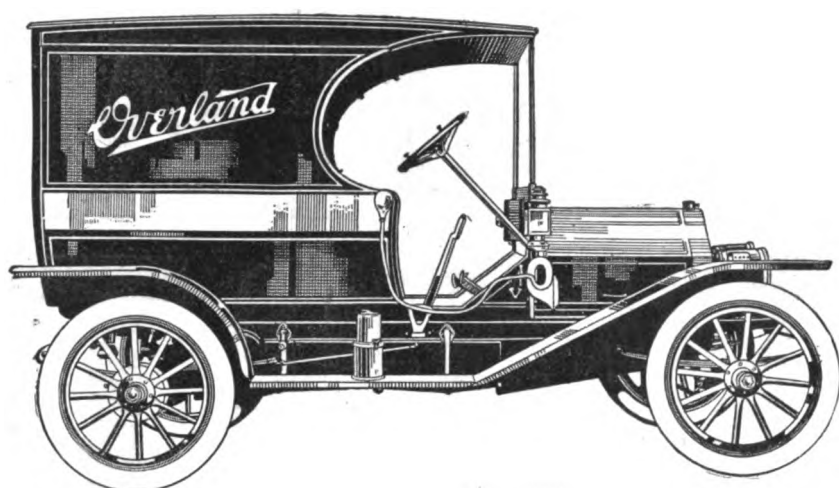
Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years

Stewart & Clark Manufacturing Company

1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
New York: 1878 Broadway
Chicago: 1312 Michigan Avenue

San Francisco: 307 Golden Gate Avenue
Los Angeles: 1212 South Main Street
Philadelphia: 608-10 North Broad Street



OVERLAND LIGHT DELIVERY WAGON

Horsepower 25
Wheelbase 102 inches

Made with the enclosed
and open express bodies.

Price \$1000

Overland Delivery Cars—Winners of the Government Test

For two years, Overland Delivery Cars—like the ones pictured here—have been used in the Government Mail Service in Indianapolis.

Each one has done the work of three horse-drawn vehicles. Each has covered from 60 to 75 miles daily—winter and summer, rain and snow—without missing a single trip. They have done this for two years and are doing it still.

Recently these cars won the Government test for automobile mail wagons, conducted at Philadelphia. There were entered in this competition practically all other makes of similar automobiles, and the Overland won against all of them.

Of all the myriad uses to which these cars are put the Mail Wagon test is the most severe.

Mail Wagons must make their regular trips, every day of the year, regardless of weather. There have been times in Indianapolis when the snow put a stop to all other traffic, but the Overland Mail Cars made their trips.

Mail wagons must be dependable—must always keep running—for the mails cannot be delayed.

They must cover from 60 to 75 miles daily, making innumerable stops.

They must be simple, so any man can operate them. They must be easy to care for, as the operators are usually novices. They must be practically trouble-proof.

Overland Delivery Cars, for two years, have met all these requirements. They have won against all competition in the Government Mail Wagon test. The cars which have done this are the best possible cars for any delivery purpose.

There are thousands of storekeepers and others who would be using these cars if they knew the facts.

A car which enables one man to do the work of three men and three horse-drawn vehicles is bound to be an economy.

We want to tell you the facts—to show you the cars—to demonstrate what you can do with them. Send for our commercial booklet today.

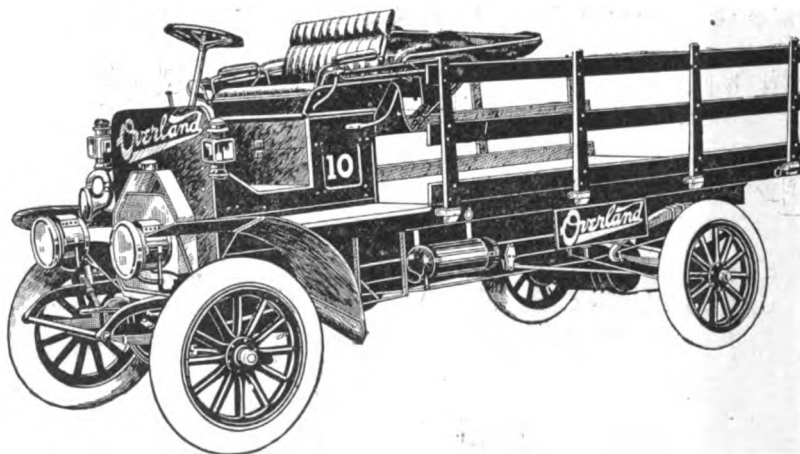
THE WILLYS-OVERLAND COMPANY, Toledo, Ohio, U. S. A.

OVERLAND ONE TON TRUCK

Horsepower 40
Wheelbase 120 inches

Maximum speed 40
miles per hour.

Price \$1500





SYNDICATE SECURES THE KRIT

Russel Interests Take Charge and Plan Enlargement—Lawrence Moore Becomes President and General Manager.

The control of the Krit Motor Car Co., of Detroit, has passed to a syndicate headed by Walter S. Russel, of the Russel Motor Axle Co., of that city.

The capital of the company is \$250,000, and by the terms of sale the purchasers buy the unissued stock at par. They will buy also whatever stock is not subscribed for by the present stockholders, who have turned back into the treasury of the company a large enough percentage of their holdings to put the balance of their holdings on a par basis.

Mr. Russel becomes chairman of the new board of directors, and Lawrence Moore assumes the presidency and general management of the company, succeeding W. S. Piggins. Mr. Moore has been connected with the automobile industry for several years, and of late has been general sales manager of the Russel Motor Axle Co. E. C. Daughy succeeds F. W. Kanter as secretary, and for the time will act as treasurer, B. C. Laughlin resigning that position, Kenneth Crittenden, designer of the Krit car, will continue at the head of the engineering department, and will retain the office of vice-president for a time.

The factory inventory, which was taken incident to the sale, shows enough material on hand to produce several hundred cars, and these will be at once assembled.

About 150 men have been employed at the factory, and it is understood that the new owners contemplate removal to more extensive quarters and a considerable enlargement of the output.

To Wind Up the Canadian Regal.

E. N. Richards, former manager of the Regal Motor Car Co. of Canada, of Walkerville, Ont., who also is a heavy stockholder,

has applied for the appointment of a receiver and for an order to wind up the business. The Canadian concern is an offshoot of the Regal company, of Detroit, and failed to prosper.

Bartholomew Heads Alumaloyd Company.

The Alumaloyd Products Co., of Canton, Ohio, which recently was incorporated under the laws of Ohio with \$250,000 capital stock, has taken over the alumaloyd sheet department of the Stark Rolling Mill Co., of that city, and about April 15 next will be housed in a big plant of its own, which is now being erected on the outskirts of Canton. Meanwhile the orders in hand are being filled from the Stark mill, although the new company is in full control of the alumaloyd product. The president of the Alumaloyd Products Co. is R. A. Bartholomew, who spent years in the development of the metal as the head of the Stark company's department, and also of the Pittsburgh Steel Specialties Co., and who promises that the world will hear very much more of the material which has done so much to simplify and render easy and economical the production of metal bodies for automobiles and all other vehicles.

To Reproduce Everitts in Canada.

The Tudhope Motor Co., of Orilla, Ont., has closed negotiations with the Metzger Motor Car Co., of Detroit, for the Canadian rights to manufacture the Everitt "30." The necessary duplicate tools and machinery to reproduce the car on the other side of the border already have been installed in the Tudhope plant and manufacturing operations are in progress.

Seller Sues Sibley to Recover Plant.

The Detroit Valve & Fittings Co. has brought suit against the Sibley Motor Car Co. to recover possession of the plant of the company located at Mackie and Solvay avenues, in Detroit. It is claimed by the Detroit Valve & Fittings Co. that the Sibley company is in default under the terms of a land contract for the purchase of the property.

"FLANDERS GROUP" IS MERGED

Five Big Michigan Plants Form a \$2,500,000 Company taking Flanders's Name—Products Varied But Co-related.

What in Michigan trade circles had come to be known as the "Flanders Group" of factories, although none bore that name, are now about to become one company—the Flanders Mfg. Co. To all intents and purposes the merger already has been completed; it merely lacks the formal ratification of the stockholders, which will be given at a meeting, which will occur in Detroit today.

The companies which will be consolidated are five in number, viz., the Grant & Woods Mfg. Co., of Chelsea, Mich., which manufactures automatic machinery, machine screw parts and steel balls, and the Pontiac Motorcycle Co., Pontiac Drop Forge Co., Pontiac Foundry Co. and Vulcan Gear Works, all of Pontiac, Mich., the nature of whose productions is indicated by their respective titles.

The Flanders in the case is Walter E. Flanders, president of the E-M-F Co., of Detroit. Although his name did not appear, it was well known that he was the father of the several enterprises; all of the Pontiac plants are reared on the same extensive plot, and, so to speak, their roofs almost touch. Their amalgamation, therefore, is not nearly so surprising as otherwise might be the case.

The Flanders Mfg. Co., which takes over the five properties, has applied for a charter under the laws of Michigan, the capitalization of the new corporation being \$2,500,000, divided into 22,500 shares, of which 15,000 shares are common stock and 7,500 7 per cent. cumulative preferred stock; each shareholder in the old companies is given the option of accepting his pro rata share in either common stock or one-half common and one-half preferred.

Flanders and his associates are in abso-

lute control of the five companies, and, of course, will prevail in the Flanders Mfg. Co. They will constitute its first board of directors as follows: Walter E. Flanders, Dr. James B. Book, William T. Barbour, president Detroit Stove Co.; Clement Studebaker, Jr., South Bend treasurer Studebaker Bros. Manufacturing Co., of South Bend, Ind., and of the E-M-F Co.; Robert M. Brownson, president Pontiac Motorcycle Co.; John T. Shaw, president First National bank, and Arthur O. Smith, Milwaukee, who is head of the enormous steel stamping plant which bears his name.

Although associated with Flanders in the E-M-F Co., which is owned by the Studebaker interests, the appearance of Clement Studebaker in the directorate of the Flanders Mfg. Co. is the most significant feature of the transaction; previously none of the Studebakers had been identified with the "Flanders group."

After the directors are formally elected at today's ratification meeting, they will in turn choose the following officers: President Robert M. Brownson; vice-president, A. O. Smith; secretary, James B. Book, Jr.; treasurer, Harry L. Stanton.

Mr. Brownson is Mr. Flanders' attorney and right-hand man. Until last year, when the "Flanders group" was projected, he was secretary and treasurer of the E-M-F Co. He resigned those offices to assume direction of the "group." Many of the heads of departments also are former E-M-F men.

The five factories which now form the Flanders Mfg. Co. constitute a gigantic establishment, the immensity of which must be seen to be fully appreciated. The Grant & Woods factory at Chelsea is a city in itself, and the same is true of the Pontiac properties, which are made up of nine separate buildings, all new and filled with the most modern equipment; in fact, the motorcycle factory and the drop forge plant are so new that they have not been fully equipped and are not yet in operation.

While the several plants will produce their respective manufactures for the open market, they all will contribute to the facility and economy of producing the Flanders motorcycles, which are to be made on such a large scale as to permit of a substantial lessening of the prevailing prices on the little vehicles. Instead of styling them motorcycles, however, it is the Flanders' intention to term the motor bicycle a "bimobile," and the tricycle—which probably will be made in package delivery form—a "trimobile."

New Sampson Takes Over Old One.

The Alden Sampson Mfg. Co., of Pittsfield, Mass., as a Massachusetts corporation capitalized at \$300,000, has been sold to the New Jersey corporation of the same name, capitalized at \$2,500,000, and the former will be dissolved. The proceeding is largely a formal one, the United States Motor Co. controlling the Sampson affairs.

"LEAGUE" SAVES ITS CHARTER

Public Interest Does Not Require Annulment, Says Attorney-General—But Name and Methods Somewhat Misleading.

Because in his opinion there is "no public interest which requires the commencement of a public action, and being doubtful that such an action could be maintained," as one of the last acts of his official career, Edward R. O'Malley, attorney-general of New York State, put an end to the proceedings looking to the annulment of the charter of the more or less notorious International Automobile League of Buffalo.

The action to that end was filed by John C. Smith, of York, Pa., and was based on the allegation that the so-called league, which really consists of three men, was posing as a membership corporation while doing business under its charter as a commercial corporation. It was charged with employing a deceptive and misleading name and methods, and with holding out illusive and fraudulent inducements to owners of automobiles, who paid \$10 per year per machine for their first year's "membership," and knowingly or otherwise agreed to pay \$5 per year forever thereafter unless 60 days' notice of withdrawal was given. In return therefor the "league" held out glowing inducements to furnish such labor and supplies and accessories "as it might be able to obtain" at dealer's prices. Few of the "members" appeared to observe the crafty wording of the glowing agreement. The "league" long ago acquired a reputation for its inability to obtain goods ordered by its members, and for its efforts to substitute "something just as good." About 1,000 letters of complaint were filed with the attorney-general, and the evidence presented brought out that the concern's headquarters were a "dingy shop" in Buffalo, and that its "purchasing agent" was a workman in the Manhattan Storage Co., an establishment in New York City long notorious for its peculiar practices.

At the time of the hearing in Albany, the "league" claimed to have a membership of 30,000 and apparently nothing but the testimony of the entire number would have convinced the deputy attorney-general, who heard the testimony, that action by the state was advisable, as in his report to his chief he holds that the 1,000 complainants constitute but a "comparatively few." He also expressed the belief that as the "members" signed a plain agreement to pay \$5 per year "from year to year," the "league" was amply justified in seeking to collect "back dues" from those who had failed to give the required 60 days' notice. But the deputy attorney-general artfully points out that "if the league desired to attempt to enforce such payment, it would have to

go into the locality where such member resided to litigate the same in some of the inferior courts, and the question in relation to the legality of such contract could then be tried out with very slight expense to the member, but very much greater expense to the league, and every one of them had their private individual remedy."

"I think there is some force in the position taken by the petitioner that the name and methods of the league are somewhat misleading with the general public, and that many of the unwary and unsophisticated might be induced to join and pay their money on the supposition that they were becoming members of the league with all the rights and privileges generally accorded to a membership in a league or other membership organization," adds the deputy attorney-general, "but while I think the league is open to some criticism in the direction above outlined. I do not think the petitioner has proven that the corporation has violated any of the provisions specified in article VII of the general corporation law, which would justify an action to be brought to attempt to annul it.

"By section 304 of the general corporation law two conditions must co-exist before the attorney-general is required to bring an action in the name of the people for any of the purposes provided for by articles V, VI and VII of the general corporation law, viz: First, he must have good reason to believe that an action can be maintained; and second, that the public interests require that an action should be brought. I do not think the petitioner has met either requirement.

"I am led to believe that the application is largely made in the interests of the manufacturers and wholesale dealers to maintain certain prices of automobile supplies to the consumers above those offered by the league, and to wipe out of existence an organization which is attempting to furnish such supplies to the consumers at reduced rates, and I cannot see that any public interest will be advanced or subserved by the prosecution of such an action even if it should be successful, but I do not believe that such an action could be maintained."

Accordingly, the deputy attorney-general recommended that the petition of Schmidt, the complainant, be denied and the attorney-general himself accepted this view and signed the formal order of denial.

American Distributing Gets Ohio Castings.

The American Distributing Co., of Jackson, Mich., henceforth will market the automobile products of the Ohio Malleable Iron Co., of Columbus, O., having just contracted for that portion of the output. The Ohio company is a big and important one.

Motz Drops "Clincher" From Its Title.

The Motz Clincher Tire and Rubber Co., of Akron, Ohio, has dropped the word "Clincher" from its title. It is now simply the Motz Tire and Rubber Co.

THREE NEW PRESIDENTS CHOSEN

Dunn Heads Accessory Makers, Coffin the Contest Association and Souther the Engineers—Organizations Thriving.

During last week all of the four national organizations most prominently identified with the automobile trade held their annual meetings and elections in New York, viz., the National Association of Automobile Manufacturers, the Motor and Accessory Manufacturers, the Society of Automobile Engineers and the Manufacturers' Contest Association.

The Motor and Accessory Manufacturers held their meeting in the association's rooms, 17 West 42d street, Saturday, 14th inst., when H. T. Dunn, of the Fisk Rubber Co., Chicopee Falls, Mass., a man who has won his way without press agents or sky rockets, was chosen president to succeed H. E. Raymond, of the B. F. Goodrich Co., who previously had let it be known that he would not accept re-election. Mr. Dunn had been serving as first vice-president, and his elevation to the higher office preceded a general moving up. The second vice-president was the only official who did not join the upward movement. He was not returned to office and, accordingly, C. T. Byrne, of Byrne-Kingston & Co., Kokomo, Ind., became first vice-president. C. E. Whitney, of the Whitney Manufacturing Co., the third vice-president, then moved up to the next peg, the third vice-presidency being filled by the election of C. F. Barnes, of Chicago, representing the Billings & Spencer Co. W. S. Gorton, of the Standard Welding Co., Cleveland, and L. M. Wainwright, of the Diamond Chain & Mfg. Co., Indianapolis, were respectively re-elected treasurer and secretary. William M. Sweet was re-appointed manager of the association.

These selections were, of course, made by the board of directors following the general meeting of the organization, which occurred the evening previous at the Waldorf-Astoria, at which time four directors were elected for terms of three years each. Messrs. Raymond, Gorton and Barnes, whose terms expired, were re-elected, and the fourth member, Charles M. Hall, of Detroit, whose term also expired, was succeeded by T. J. Wetzel, of the Stevens Manufacturing Co., Mr. Hall having left the C. M. Hall Lamp Co., which previously he represented in the M. A. M., and being no longer eligible to office. The directors who held over were D. J. Post, Veeder Mfg. Co.; H. W. Chapin, Brown-Lipe Gear Co., and E. S. Fretz, Light Mfg. & Foundry Co.

The reports of the officers showed the organization to be not merely in a flourishing condition but sound to the core.

There are, approximately, \$70,000 in the treasury, and 230 members on the roll, of whom 61 were added during the year. There were but three resignations during the twelvemonth and one firm had been expelled. It is no secret that not all of those who applied for membership in the M. A. M. were able to pass the membership committee; in fact the number of rejections was unusually large, which, as stated by the report of the retiring president, was due to the "desire not to admit other than legitimately entitled firms under our charter."

"It would mean," he added, "that with so comprehensive a membership as we now enjoy it might be assumed that the industry is fully represented and, without trying to make a close and unfair corporation of ourselves, great care may be used in their admissions to membership." Mr. Raymond also stated that the M. A. M. credit bureau and the trade information bureau had fully demonstrated their effectiveness and in every way justified their existence.

Most of his report had to do with the subject of shows and of the increased difficulty caused by the double shows in New York and Chicago. He also dealt with the refusal to grant a sanction to the recent "independent" show held in Grand Central Palace New York. "Your directors paid little attention to this show," he said. "We felt that the industry demanded fewer shows than more of them. There were among the firms to exhibit cars, many we would have liked to co-operate with, but the principle of granting an eleventh hour sanction, rushing our members in, possibly encouraging private promotion of shows at our expense, was too vital to warrant any other action than refusal of sanction. The show had not secured a sanction from the National Association of Automobile Manufacturers. It had been refused by that body. There was no correct basis of consideration that would establish the propriety of granting such a sanction. We were not being asked to consider an application from any well-organized body of car builders. The venture was a personal one. As such, the action taken was proper. It is distressing to have to face possible additional show burdens. Last year we had four to carry—Atlanta, New York City, Chicago and Boston. Four weeks of disorganization of business. This year we have five weeks of the same thing. Two each in New York and Chicago and one in Boston. To have added this show it would have been six weeks. We are entitled to, safeguard ourselves against the growth of the unnecessary expense, the unequal burden on our end of the industry, the extension of time required from the legitimate prosecution of the upbuilding of our business. We desire to emphasize and make clear our reference to an unequal tax on us as contrasted with the car builder. The licensed car manufacturer has only to show

at New York and Chicago one week each his pleasure cars. The few who manufacture trucks, a second week. The unlicensed manufacturer one week in Chicago and, if he supports the Palace Show, two weeks. The times are set far apart for him. The great majority of our members must show five weeks, a vastly greater number of exhibitors than the car builders, a vastly greater number of representatives in attendance. Self-protection demands careful thought to the question of sanction of additional shows, no matter how meritorious the claims for such seem to be, as made by the supporters."

The meeting of the Manufacturers' Contest Association, on Friday, 13th inst., was held in the board room of the Association of Licensed Automobile Manufacturers, Benjamin Briscoe, as president, occupying the chair. Because of his recently increased responsibilities, due to the formation of the United States Motor Co., of which he is the head, Mr. Briscoe declined to accept re-election. He was succeeded by Howard E. Coffin, of the Hudson Motor Car Co., Detroit. The other officers chosen were Howard Marmon, Nordyke & Marmon Co., Indianapolis, Ind., vice-president; E. R. Hollander, Fiat Automobile Co., New York, secretary-treasurer; Russell A. Field, New York, assistant secretary-treasurer. Howard Marmon was elected also to the important office of chairman of the general rules committee, which so ably had been filled in the past by Howard E. Coffin. The directors of the association elected include the officers and C. E. Emise, Lozier Motor Co., and W. H. Vandervoort, Moline Automobile Co.

The reports of officers showed that forty of the prominent makers are now enrolled as members, nine of whom were admitted during 1910.

Among the important subjects considered were the creation of a board of review to act as a final board of appeals in disputed affairs, the members to be chosen by the American Automobile Association and the Manufacturers' Contest Association, and to be made up of men experienced and qualified to make decisions of important disputes. It was agreed that appeal to this board of review must be accompanied by a fee of one thousand dollars, to be retained regardless of the disposition of the case.

S. M. Butler, chairman of the American Automobile Association Contest Board; Fred J. Wagner, official A. A. A. starter, and A. R. Pardington, formerly general manager of the Long Island Motor Parkway, spoke in exhaustive manner of the plans for a national circuit. This subject is to be submitted for approval to the Manufacturers' Contest Association by a mail vote. Expressions of opinion from those present were obtained on a proposal to create a paid technical committee for

the American Automobile Association, but decision was deferred.

A large number of recommendations for changes of minor nature in the contest rules for 1911 were finally passed upon and will be made public when adopted by the contest board of the American Automobile Association. The next meeting of M. C. A. will be held during the national automobile show at Chicago, January 28 to February 11.

Henry Souther, of Hartford, Conn., was chosen president of the Society of Automobile Engineers, which held its meeting and election in the assembly room of the Automobile Club of America on the 11th inst. He succeeds Howard E. Coffin, of Detroit, who, during his term of office, gave freely not only of his time but of his purse for the cause of the organization. By virtue of having held the office, however, Mr. Coffin is not entirely lost to the society, as he ipso facto becomes a member of the executive committee.

The only other elective officers who were required to be elected were three members of the executive committee and the treasurer. For the latter office A. H. Whitney, of New York, was chosen to succeed himself. The executive committeemen chosen were: Henry May, Pierce-Arrow; Howard Marmon, Nordyke & Marmon, and Charles E. Davis, Warner Gear Co. The officers who hold over are: Henri G. Chatain, first vice-president; R. C. Carpenter, second vice-president; Coker F. Clarkson, secretary and general manager; Hermann F. Cuntz, W. G. Hall, H. F. Donaldson, Thomas J. Fay and Henry Hess, executive committee.

The association has \$2,700 in the treasury, and the report of Secretary Clarkson showed the tremendous growth of membership that has marked the year. There are 614 names on the roll, of which 318 were added during 1910. Of the new members, 200 are active, 70 are associates and 32 are juniors.

The meeting of the National Association of Automobile Manufacturers occurred on the 12th inst. and lasted less than 30 minutes—just long enough to re-elect five members of the executive committee whose terms had expired and for the treasurer to report a balance of \$40,000 in bank. The officers will be elected at a meeting which will be held during the Chicago show which opens on Saturday, 28th inst.

Carlson Seeking Site on Long Island.

Charles A. Carlson, who is the head of the Carlson Motor Vehicle Co., of Philadelphia, is negotiating for a site at Bridgehampton, L. I., and is reported to have practically consummated its purchase. He is said to have in view the removal from Philadelphia of the Carlson plant, which is devoted to the manufacture of trucks and wagons, to the Long Island town.

THE WEEK'S INCORPORATIONS.

Dubuque, Ia.—Dubuque Auto & Garage Co., under Iowa laws, with \$25,000 capital; to deal in automobiles.

New Haven, Conn.—White Motors Co., under Connecticut laws, with \$5,000 capital; to deal in automobiles.

Philadelphia, Pa.—D. Benjamin General Motor Car Co., under Pennsylvania laws, with \$10,000 capital; to deal in automobiles.

Detroit, Mich.—McCrea & Co., under Michigan laws, with \$10,000 capital. Corporators—R. C. Hupp, J. W. McCrea, L. G. Hupp.

Shelbyville, Ind.—Shelbyville Co-Operative Garage Co., under Indiana laws, with \$4,000 capital. Corporators—Harry Chambers and others.

Dallas, Tex.—Mitchell Co., under Texas laws, with \$5,000 capital; to deal in motor vehicles. Corporators—F. J. Rowan, W. J. Moroney, J. R. Golden.

Los Angeles, Cal.—California Auto Tire Filler Co., under California laws, with \$50,000 capital. Corporators—I. A. Strouss, B. H. Loveless, G. E. Waiter.

Kansas City, Mo.—United States Motor Co., under Missouri laws, with \$2,000 capital. Corporators—W. S. Hathaway, Frank R. Tate, G. W. Jones and others.

Detroit, Mich.—Simplex Differential Gear Co., under Michigan laws, with \$25,000 capital. Corporators—Harry E. and Jesse H. Pcnault, William J. Brand.

Kansas City, Mo.—Williams Motor Car Co., under Missouri laws, with \$10,000 capital; to deal in motor vehicles. Corporators—W. A. Williams, Norman Wilson, W. H. Blood.

Portland, Ore.—Stoddard-Dayton Auto Co., under Oregon laws, with \$100,000 capital; to deal in motor vehicles. Corporators—W. D. Jellison, E. E. Gerlinger, Guy E. Holman.

Portland, Me.—Forest City Garage, under Maine laws, with \$10,000 capital; to deal in automobiles and maintain a garage and repair shop. Corporators—Clarence E. Allen and others.

Los Angeles, Cal.—Owners' Automobile Co., under California laws, with \$75,000 capital; to deal in automobiles. Corporators—O. S. Barnum, A. S. Goldflam, G. F. Conant and others.

Ottawa, Ill.—Ottawa Garage Co., under Illinois laws, with \$20,000 capital; to manufacture and deal in automobiles. Corporators—Walter E. Ners, John O. Langman, Jesse E. Rasmussen.

Chicago, Ill.—Burgess Lamp Co., under Illinois laws, with \$1,500 capital; to manufacture automobile lamps and accessories. Corporators—William Friedman, H. J. Toner, E. S. Fishback.

Minneapolis, Minn.—Gas-Corliss Co., under Minnesota laws, with \$300,000 capital;

to manufacture gas engines. Corporators—William A. Sorg, Carl Lindberg and John E. Tappan, all of Minneapolis, and Swan Lindberg, of Appleton, Wis.

Guilford, Conn.—Archibald-Guilford Wheel Co., under Connecticut laws, with \$30,000 capital; to manufacture automobile and vehicle wheels. Corporators—Warren Motley, of Nahant, Mass.; W. Rodman Fay, of Boston, Mass.; Ralph O. Wells, of Hartford, Conn.

Changes Among Prominent Tradesmen.

Walter H. Fink has been appointed advertising manager of the Pullman Motor Car Co., of York, Pa. Previously he was in charge of the Philadelphia Press's automobile department.

George C. Gordon has been elected treasurer of the Selden Motor Vehicle Co., of Rochester, N. Y. Previously the office was held by John H. Stedman, who combined it with the secretaryship of the company.

John Maus, who has been connected with the Goodyear Tire & Rubber Co.'s New York branch for several years, has been promoted to the management of the establishment. He succeeds Charles Measure, who has been called to the factory in Akron, Ohio, for special duty.

Frank E. Blanchard has been appointed assistant sales manager of the Firestone Tire & Rubber So., of Akron, Ohio. He has had ripe experience in the business, the handling of tires having been a part of his duties as sales manager of the Whitman & Barnes Mfg. Co. for some 16 years.

Three Suits Follow Detroit Failure.

Three suits, each for \$25,000 damages, were filed by Arthur L. Cornelius, assignee of the University Motor Car Co., of Detroit, Mich., on Monday last, 16th inst., against John G. Krieg, trustee; Louis Newman and Charles L. Morgan, the litigation throwing some light on the methods pursued in company promotion. Cornelius alleges that when the University company was formed Krieg, Newman and Morgan subscribed for \$36,000 worth of stock which was not paid for, although the defendants attempted to make it appear that they had paid cash by incorporating a sale of patents, etc., for \$36,000 in the report of the meeting of the directors. On the strength of this transaction, \$5,000 worth of stock was sold to others and bills aggregating \$5,000 more were contracted. On Dec. 5, 1910, Cornelius, as assignee, became possessed of the debts of the company, hence the three suits.

Hupp Opens Branch in Kansas City.

The Hupp Motor Car Co. has established a branch in Kansas City, Mo., at 34th street and Broadway. It will be in charge of Christian & Co., as managers, and will handle Hupmobiles in Missouri, Kansas, Oklahoma, Texas and New Mexico.

IN THE RETAIL WORLD.

Marquardt Brothers have opened a garage in Madison, Wis.

R. A. Creek, of Denver, Colo., has been handed a large slice of Kissel territory, having been given the distributing agency for two entire states—Colorado and Utah.

Louis Isler, of Chapman, Kans., has leased the Phipps building, formerly occupied by Loudon Bros., on the south side. He will conduct an automobile livery and garage there.

E. J. Powers, doing business as the Mesaba Auto & Machine Co., Hibbing, Minn., has sold his interest to Paul Williams; the latter will conduct the business in his own name.

Jacob Wacker, of Jersey City, has let contracts for the erection of a garage at 1737-1739 Boulevard, in the Greenville section of Jersey City. The structure will cost about \$8,500.

C. W. Clifford, Jr., of Bath, Me., who is described as a wealthy society man, has embarked in the automobile business in that city. He has taken the Velie agency for the entire State of Maine.

Earl J. Smith and Gene Cochran have formed a partnership and opened a garage at 1018 Court street, Reading, Pa. They will conduct business under the style the Penn Auto & Garage Co.

The Motor Accesories Co., Los Angeles, Cal., has removed to 124-226 East Ninth street, where they will occupy the ground floor. Previously the company was located on South Figueroa street.

The Elmore Motor Car Co., of Cleveland, O., heretofore located at Euclid avenue and E. 19th street, has leased the building at 2034 Euclid avenue. Possession will be taken immediately.

The Bowman-Campbell Co., of Minneapolis, Minn., has opened a fireproof garage and repair shop at 1208 West Lake street. The structure is 40 x 84 feet, one story high, and is of concrete and veneer.

Plans have been completed for a garage to be erected at the corner of Monument and 11th streets, Baltimore, Md., for Charles J. F. Steiner. The structure will be 80 x 160 feet and of fireproof construction.

The West Penn Automobile Co., of Pittsburgh, Pa., which will handle the Bergdoll cars and Detroit electrics, has established its salesrooms at 4923 Center avenue; a new building just has been completed for its use at that address.

Under the style the Otto Motor Car Co. a new salesroom has been opened at 1964 Broadway, New York, where the Otto line of automobiles will be displayed. William R. Millar is president and Albert Engelhard treasurer of the company.

DeTamble cars will form the mainstay of the Standard Garage which just has opened on Ontario street, Toledo, Ohio.

Harry L. Gordon, the owner, formerly of Franklin, Pa., has the DeTamble agency for the northwestern part of Ohio.

J. B. Chalmers and J. C. McLaren have formed a partnership and opened a garage and salesroom at 229 Hughes street, Youngstown, Ohio. They will specialize in Elmore cars.

Charles A. Bunnell, a dealer in New Haven, Conn., has filed a petition in bankruptcy in the United States District Court. He places his liabilities at \$2,111.59, and his assets at \$851.33, of which latter only about \$455 are available for creditors.

One of the largest automobile salesrooms in the city of Baltimore is being constructed for the Lambert Automobile Co. It will occupy the ground floor of a three-story structure, 120 x 50 feet, at the corner of Maryland and Mount Royal avenues.

The Great Northern Implement Co., dealer in farming machinery at Minneapolis, Minn., has entered the automobile field and taken the state agency for the Herreshoff and Staver lines. A. H. Collins will be in charge of the automobile department of the company.

The Woods Electric Car Co. has leased the building 2023-2025 West Pico street, Los Angeles, Cal. Previously the company was represented in that city by an agency but its lease of the West Pico street premises indicates that hereafter it will market its own product.

The Heinrichs Automobile Co. has commenced business at 5123-25 Delmar boulevard, St. Louis, Mo. Valentine Heinrichs, the president, formerly was the St. Louis Maxwell agent, but severed his connection with the manufacturers in December in order to go into the general garage and renting business.

The Brownlee Auto Co., of San Antonio, Tex., which on December 28 last was petitioned into involuntary bankruptcy, has been placed in the hands of Clyde Davies, receiver. The court authorized the receiver to borrow money and continue the business, and it is said that the company will be able to pay dollar for dollar.

Walter G. McCarty, a real estate operator, and O. K. Parker, an experienced automobile man, have formed the McCarty-Parker Automobile Co., in Los Angeles, Cal., and opened a garage and salesroom on the corner of 11th and Flower streets, in that city, where they will handle the White cars, both steam and gasoline. Parker is president and general manager of the company.

E. E. Gerlinger, Oregon distributor of the Stoddard-Dayton cars, has incorporated his business with a capital of \$100,000, under the style the Stoddard-Dayton Auto Co., with headquarters at 86 10th street, Portland, Ore. W. D. Jellison is president and treasurer of the new company, while E. E. Gerlinger takes the office of secretary. Guy

E. Holman will be retained as sales manager of the new concern.

The H. J. Koehler Co., of New York, Newark and Boston, one of the original stockholders in the Metzger Motor Car Co., of Detroit, has disposed of its holdings in the company and hereafter probably will represent the Hupmobile exclusively in the territory which it controls, which includes a part of New York and Pennsylvania, and all of the New England States. In addition to Hupmobile pleasure cars, however, the agency for a commercial vehicle will be taken on.

A petition in involuntary bankruptcy has been filed against the Waite-Robbins Motor Co., of Boston, Mass., because Frederick R. Robbins, president of the company, and since April, 1910, sole owner, is missing from the offices and from his home. The court appointed Attorney Clarence W. Rowley receiver with bonds of \$900. The liabilities of the concern are \$738.35, consisting of \$600 overdue rent and \$138.35 in salaries owing to Robert Seymour and Victor Hudson, employees. The assets are \$125 in a Boston bank, and a new motor truck, which had been ordered by Robbins, and is in the railroad freight yards; both have been attached by the creditors. The company was organized in March, 1910.

Recent Losses by Fire.

New Providence, Ia.—W. L. Thornton's garage destroyed.

Troy, N. Y.—Payne Automobile Co., garage and five cars destroyed. Loss, \$13,000.

Pittsburg, Pa.—Henry Hubbard, 520 Florence avenue, garage and two automobiles burned; loss, \$5,000.

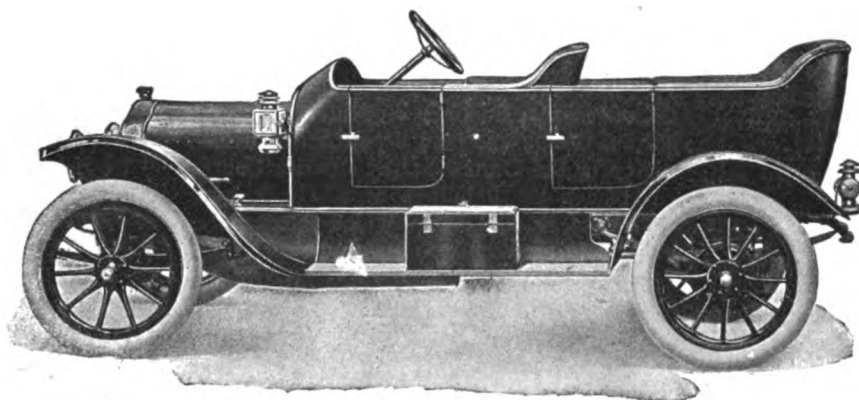
Cincinnati, Ohio—Branch of Velie Motor Co., several cars damaged by fire and water. Loss about \$4,000; covered by insurance.

Chicago, Ill.—Trout Auto Livery Co., 243-45 Michigan avenue, garage and twenty automobiles damaged; loss, \$30,000; caused by crossed electric wires.

Allentown, Pa.—Allentown Auto Co., 124 South Church street, building and three taxicabs damaged; loss, \$5,000; caused by crossed electric wires.

M. A. M. Admits Nine New Members.

At the meeting of the board of directors of the Motor and Accessory Manufacturers last week there were admitted nine new members, making a total membership of 230. The newcomers are: Amesbury Metal Body Co., Amesbury, Mass.; Armour Curled Hair Works, Chicago, Ill.; Atlantic Refining Co., Cleveland, Ohio; Booth Demountable Rim Co., Cleveland, Ohio; Dean Electric Co., Elyria, Ill.; Dorian Demountable Rim Co., New York City; Hayes Wheel Co., Jackson, Mich.; Medina Stamping & Machine Co., Medina, N. Y.; Union Drawn Steel Co., New York City, N. Y.



If You Could Go Through Our Factory

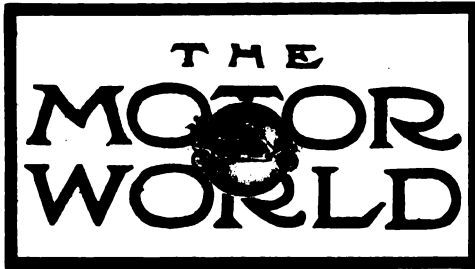
TO go through our factory--to see just how carefully each part of our cars is built is often a liberal education in itself. To stand before the great heat-treating furnaces and see how the grain of chrome-nickel-steel is made finer, closer and tougher, is something—to take a cold chisel and blacksmith hammer and try to cut a tooth out of a gear so treated, without success, and you begin to understand what “well built” means in the White Factory. Heretofore, the technical terms we used to tell you how good the materials were, appealed to you as mere words, but in the presence of this demonstration even a tyro knows the thing is well done. One gets more insight into quality in a moment than in much reading of technical descriptions.

This is but one of the refinements everywhere present in the White construction. Four forward speeds in transmission work is just as superior to three speeds as our heat-treated steels are to ordinary steels. So careful is the White construction that even American castings are not satisfactory, and our cylinder castings are imported from France, where they make them a few at a time and get them just right. All these things mean life for the car—continued satisfactory service for its owner, and such a car is cheaper—regardless of its price, because upkeep and repairs are the big items in automobile operation. The White is economical—every owner can prove it.

May we send you catalog or owners testimonials?


The White Company

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Oppose the Licensing of Owners!

Although he had been in office but twelve days, Mr. Edward Lazansky, New York's newly elected secretary of state, had made such a profound study of the situation that at the banquet of the Association of Licensed Automobile Manufacturers on Thursday evening last, he was able to declare that automobile owners should be required to undergo examination and to obtain licenses before being permitted to make use of their property.

Of course, the idea is not new. It already has been put into practice in several states, and due to the desire and efforts of the private corporation styling itself the Touring Club of America to obtain gratuitous advertising and to similar desire and effort on the part of the solitary individual who substantially is all that comprises the so-called National Highways Protective Society, the notion that owners should be licensed has obtained lodgment in New York and elsewhere. In all probability Mr.

Lazansky formed his opinion on the subject from the publicity which has had its origin in the two sources referred to. But regardless of such things, it is a subject that demands the immediate and serious attention of all men and organizations that are concerned not merely with the preservation of personal rights, but with the growth and wellbeing of automobilism. For whenever it is made appear, more than it already has been made appear, that in order to drive a motor car it is necessary to possess mechanical or more or less technical knowledge and skill, the difficulty of furthering the sale and use of motor cars will be immeasurably increased.

If it were possible to obtain authentic data probably it would be found that the greatest deterrent to the purchase of cars is the belief already existing that their operation requires the employment of a chauffeur. Very many men who are able and anxious to buy cars do not do so because the steady drain constituting the chauffeur's wage is beyond their means. It is about the first and greatest problem that confronts the average man who is not possessed of a mechanical bent. Requirement that he shall undergo examination and obtain a license is about all that is necessary to put the motor car forever beyond his thoughts.

There has been a lot of stuff and illogic used to support the licenses-for-owners campaign. There is nothing weird or wonderful about the operation and control of a motor car. Except in fancy, it is not more difficult to turn a steering wheel to the right or left than it is to pull a rein in one direction or the other, nor is there anything very complicated about pushing a lever forward or pulling it backward; and that substantially is all there is to the operation of an automobile. It may be added, too, that the movement of the steering wheel and the lever bring quicker response than does contemporaneous movement of a pair of reins. It does not require any particular skill or mechanical knowledge to perform these simple operations. Practice simply makes perfect, and no automobile owner untutored would think of using the public highways until he has attained at least a certain degree of perfection, which is far more than can be said of those who purchase horses.

The idea that the automobile owner is more prone to "take chances" than the professional driver is a fallacy. Taken as

a class we believe owners have a greater conception of their responsibility for those who accompany them and far more regard for their own property. The exception merely proves the rule.

However desirable it may be, it is not necessary to be familiar with the "in'ards" of a car to know how to drive and control it. To require such knowledge is equivalent to requiring that all who drive horses shall have a knowledge of veterinary surgery, and when a law is passed that automobile owners shall "qualify" in such fashion, it will be time to apply the kindred law to horsemen. Chauffeurs are employed, when they are employed, not merely as a matter of convenience or solely because of their skill in driving, but because they are at least supposed to have knowledge of "surgery," so to speak. They pay the state a license fee in order to practice it. But it is repulsive to the doctrine of free institutions that any man should be required to obtain a license for personal right to use his private property in law-abiding manner. The motorist already pays high for his own identification mark, and that is more than sufficient. The licensing system generally has been badly overdone, and probably is one of the causes unconsciously contributing to the growth of the socialistic sentiment in this country which finally is "giving pause" to both of the older political parties.

There is no justice in laws requiring the licensing of owners of motor cars. Such laws are founded on false premises and should be opposed wherever they exist and wherever they are proposed. New York State has gotten along famously without one for some 12 years, and the call for one at this time chiefly is a "manufactured" one; and the "manufacturers" of it might better devote their attention to the boys who are permitted to drive business vehicles, and to the children of both sexes who are permitted to thread public thoroughfares in pony carts.

Motor cars are easier to direct and control than horses, and infinitely easier to stop when danger threatens. They have two brakes and two means of cutting off power. The average horse-drawn vehicle has none. When a horse takes its bit in its teeth, it usually is beyond direction or control, and it is well to recall that it hurts just as much to be injured by one vehicle as by another.

The man who has a technical knowledge of his horse or his motor rarely is assisted

by it when emergencies arise, and nothing is more deliciously amusing than methodical examinations which require men to tell what they would do in the event of certain extreme contingencies, which call not for knowledge of anatomy or mechanism, but for quick-acting brains, which no examination or license does assure or ever can assure.

At the risk of arousing a storm of opposing sentiment, we are frank to say that it is our opinion that the one way in which the operation of automobiles may be rendered still safer is to place the accelerator pedal where it cannot be trod upon. Operated by a push pedal, it is a wonderful convenience, we well know; but in time of confusion and excitement born of sudden emergency the push pedal is in a place where it invites disaster. If reliable data were obtainable, we believe it would be found that involuntary pressure of the accelerator pedal of pressure, when it was designed to operate the clutch or brake pedal, has caused far more accidents than ever has been charged to that source. Pressing the accelerator pedal is akin to putting whip or spurs to a horse, and applied at the wrong time the result usually is the same. Whip and spurs are but occasionally resorted to, while the accelerator is used constantly.

Truck contests from Chicago to New York, from New York to Boston, or from Denver to San Francisco well may be spared, and though the ambitions and pocket-books of some aspiring persons, more or less indirectly connected with the industry, may suffer, the manufacturers most concerned should nip all such projects in the bud. Trucks and delivery wagons are not designed for such service, nor for the purposes of sport or "sports," and the sooner the fact is made plain and is more fully realized, the better it will be for all concerned. The motor truck does not require such superficial publicity or artificial and questionable stimulation as comes of such half-baked or over-done contests, and anyone engaged in the manufacture or sale of commercial vehicles who feels that they are necessary to his calling deserves commiseration. The motor truck is a serious vehicle designed for serious uses. Keep it out of the hands of the "sports!" If we must have tests, let them be practical tests, not burlesque contests calculated to make the countryside grin.

COMING EVENTS

January 14-21, Milwaukee, Wis.—Milwaukee Automobile Dealers' Association's second annual show in the Auditorium.

January 14-28, Philadelphia, Pa.—Annual show of Philadelphia Licensed Automobile Dealers' Association in Third Regiment Armory.

January 16-21, New York City—Association of Licensed Automobile Manufacturers' eleventh annual show in Madison Square Garden. Second week devoted to commercial vehicles.

January 16-21, Detroit, Mich.—Detroit Automobile Dealers' Association's annual show in Wayne Pavilion.

January 25-28, St. Paul, Minn.—First annual show of automobile dealers in Auditorium.

January 27-February 4, Vancouver, B. C.—First annual show.

January 28-February 4, Chicago, Ill.—National Association of Automobile Manufacturers' tenth annual national show in Coliseum. Pleasure cars and accessories only.

January 28-29, Oakland, Cal.—Racemeet on Oakland motordrome.

January 30-February 4, Troy, N. Y.—Troy Automobile Club's show in State armory.

February 4-11, San Francisco, Cal.—San Francisco Motor Club's show in Dreamland and Pavilion rinks.

February 6-9, Grand Forks, N. D.—Grand Forks Automobile Dealers' Association's show in Auditorium.

February 6-11, Chicago, Ill.—National Association of Automobile Manufacturers' tenth national show in Coliseum. Pleasure and commercial cars, motorcycles and accessories.

February 6-11, Buffalo, N. Y.—Annual show.

February 8-12, Davenport, Ia.—Davenport automobile dealers' show at Commercial Club.

February 13-18, Washington, D. C.—Second annual show in Convention hall.

February 13-18, Winnipeg, Canada.—Winnipeg Motor Trades Association's show.

February 13-18, Kansas City, Mo.—Motor Car Trade Association's show in Convention hall.

February 14-18, Memphis, Tenn.—Memphis automobile dealers' first annual show in the Auditorium.

February 13-28, Dayton, Ohio—Second annual show in Memorial building.

February 18-25, Binghamton, N. Y.—Annual show.

February 18-25, Minneapolis, Minn.—Minneapolis Automobile Show Association's annual show in National Guard Armory.

February 18-25, Newark, N. J.—New Jersey Automobile Exhibition Co.'s fourth annual show.

February 18-25, Brooklyn, N. Y.—First annual show of Brooklyn automobile dealers at 23d Regiment armory.

February 20, Cleveland, O.—Show in Central Armory.

February 20-25, Baltimore, Md.—Annual show in Fifth Regiment Armory.

February 20-25, Cincinnati, O.—Cincinnati Automobile Dealers' Association's show in Music Hall.

February 20-25, Hartford, Conn.—Hartford Automobile Dealers' Association's fourth annual show in Foot Guard armory.

February 20-25, Omaha, Neb.—Third annual show of the Omaha Automobile Show Association in Auditorium.

February 24-27, New Orleans, La.—First annual show of New Orleans Automobile Club at Fair Grounds.

February 24-25, Keene, N. H.—Consolidated Motorcyclists' third annual motor-vehicle show.

February 25-27, New Orleans, La.—New Orleans Automobile Club's annual Mardi Gras racemeet on Fair Grounds track.

February 25-March 4, Toronto, Canada—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

March 11-18, Cleveland, O.—Manufacturers and Dealers' Association's show in Central Armory.

March 14-18, Denver, Col.—Annual Show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

March 25-April 1, Pittsburg, Pa.—Pittsburg Automobile Dealers' Association's fifth annual show in Duquesne Garden.

March 27-30, Daytona, Fla.—Racemeet on Daytona Beach.

April 1-8, Montreal, Can.—Annual show in Coliseum.

Pipe of Peace Smoked at A. L. A. M. Banquet

The war is over. The lawyers are being paid and the pipe of peace actually has been smoked. It was smoked at the annual dinner of the Association of Licensed Automobile Manufacturers, which occurred in the Hotel Astor, New York, on Thursday last, 12th inst., and which, like a once widely advertised patent medicine, was "peculiar in itself." Due to the curious whirligig of time, and also to a decision of the United States Court of Appeals, it seemed that napkins with mourning borders should mark the occasion, but instead it developed a "hero," and the "hero," strange to say, was not a licensee. Although he did nothing more than bow and try to appear at ease, Henry Ford, for so many years the chief and unrelenting adversary of the A. L. A. M. and its Selden patent, was "the man of the hour." If Ford was a glorious fighter, the A. L. A. M. proved itself an equally glorious loser. The scars of war were washed away with wine.

The banquet itself, of course, had been planned long in advance. Ford was then at war with the association, and there was no thought, at least on one side, that a court of appeals would explode a mine under the Selden patent. Three days before the banquet occurred, however, the mine was touched off and the Selden patent was blown to flinders. If the association itself was disfigured, it remained in the ring, and it proved that if it was first in war, it was also first in peace. A telegraphic invitation was dispatched to Ford and his associates to be present at Thursday's banquet. It was promptly accepted. As a result, Ford, together with James Couzens, secretary and treasurer of the Ford company, and W. Benton Crisp, of the Ford legal staff, occupied seats at the guest table, cheek by jowl with their late adversaries.

When the good things had been disposed of, Col. Charles Clifton, president of the A. L. A. M., touched the right chord by immediately expressing a welcome to Mr. Ford and his associates, at what he termed the "unification of the industry." About 300 persons were present, and Mr. Clifton's remarks were greeted with several rounds of cheers and loud cries of "Ford, Ford, Ford," and "Speech, speech, speech." Ford shook his head but finally was forced to rise and bow his acknowledgments. The cheers and cries, however, refused to subside, and after the Detroiters had made another bow

Counselor Crisp came to his assistance and responded for him. He paid tribute to his late opponents, giving them credit for having always acted in manly and honorable fashion, and stating that now that the issue had been settled, he, on behalf of his associates, was more than ready and willing to grasp the proffered hand of friendship. The sentiment was well received and loudly applauded, and then to cement the newly formed friendship the pipe of peace was smoked. It was a long church-warden pipe at which President Clifton took the first pull. He passed it to Mr. Ford, and, although the latter does not use tobacco in any form, he made a brave effort to do so on this occasion. The pipe was also smoked by his associates and by others at the guest table.

The ceremony performed, Frank L. Lawrence, president of the Lotos Club, assumed the duties of toastmaster. Hon. Edward Lazansky, the newly elected secretary of state, was the first speaker. He addressed himself with great deliberation and impressive drawl to the subject, "The Motor Vehicle Laws of New York State." Among other things he made known that he did not believe that chauffeurs should be taxed for the privilege of earning their livelihood, and stated that he would bring his influence to bear to remove the tax that at present exists. In the next breath, however, he expressed the opinion that owners of automobiles should be required to pass an examination and to obtain licenses.

The star of the evening, in more than one respect, was James Schermerhorn, owner of the Detroit Times, whose reputation for oratory had preceded him. He more than lived up to it. "The Star of the Empire—a Fixed Star, But Everything Else Takes Its Way" was the subject to which he applied himself. Mr. Schermerhorn has a 100 horsepower delivery and an almost inexhaustible fuel capacity, and had his address been cut in half it would have been voted a brilliant effort, and by far the hit of the evening. But the speaker was too full of words to leave any of them unspoken. Apparently the idea which he sought to convey was that Detroit is now the "Star of the Empire," and that he himself is about the only pedestrian left in that city, but his star-studded speech wandered from one end of the world to the other and back again. It touched the skies above and even reached

into the realms below the earth. The sun-kissed shores of California, the Campus Martius of Detroit, the glories of Rome and the words and wisdom of the philosophers of old were intermingled almost without end. In the effort to follow him, many of his auditors were mystified to the point of grogginess. Even the other oratorical lights at the guests' table appeared to blink in trying to trace the route of Mr. Schermerhorn's starry talk. The applause which greeted the gentleman when he concluded appeared to be born of a feeling of relief as much as from a feeling of appreciation and courtesy.

When Henry M. Duncan, a New York automobile body maker with an aptitude for public speaking, was called on, he apparently was somewhat dazed, and, after confessing a natural diffidence, he happily remarked that "from what he knew of the bunch before him, most of them were unable to distinguish between the Sword of Jeremiah, to which Mr. Schermerhorn had alluded, and the wail of a poisoned pup." Mr. Duncan's sentiments were wildly applauded, and, although he did not speak to any particular point, his address was brief and apt, even though it did include some poetry.

Howard E. Raymond spoke for the Motor and Accessory Manufacturers and "Pal," the artist who was responsible for the paintings used in the Madison Square Garden show decorations, gave the diners what was called "A Lesson in Drawing." He transferred to an artist's drawing board, sketches he had made of the leading lights at the guests' table, and explained how they were made and also disclosed other tricks of his trade.

Just before adjournment Col. George Pope, the chairman of the A. L. A. M. show committee for several years, and close to being the "Grand Old Man" of the industry, received substantial evidence of the appreciation in which he is held. It took the form of presentation of a large silver loving cup, the gift of the association for his "tireless work and faithful endeavor," as President Clifton stated in making the presentation. The spontaneous and sincere burst of applause that followed the gift was in itself a tribute to the esteem in which the "good, gray colonel" is held. He expressed his thanks with a show of the feeling that is a part of the man.

M. A. M. Banquet at Waldorf Proves "Largest Ever"

Charles Clifton, president of the Association of Licensed Automobile Manufacturers, was the first and chief speaker at the third annual banquet of the Motor and Accessory Manufacturers, on Friday evening last, 13th inst. Clarence Harvey, poet and play-

wright, was the chief funmaker, and he made lots of it.

The banquet itself, which was served in the grand ball room of the Waldorf-Astoria, New York, was the largest function of the sort that ever has occurred. Covers were

laid for more than 400. Joseph L. Barbour, of Hartford, Conn., acted as toastmaster, the others at the guests' table being: Messrs. Charles Clifton, president A. L. A. M.; Edward W. S. Johnson, Esq.; Dr. E. R. L. Gould, former chamberlain of New York;

ANNUAL BANQUET OF THE ASSOCIATION OF LICENSED AUTOMOBILE MANUFACTURERS IN HOTEL ASTOR, NEW YORK, JANUARY 12.



Clarence Harvey; H. E. Raymond, president M. A. M.; Hon. Frank C. Laughlin; George Pope, chairman A. L. A. M. show committee; Merle L. Downs, secretary A. L. A. M. show committee; Alfred Reeves, general manager A. L. A. M.; Coker F. Clarkson, secretary and general manager S. A. E.; Samuel A. Miles, manager Chicago show; Chester I. Campbell, manager Boston show; Robert W. Barbour, William M. Sweet, manager M. A. M.; Sidney S. Myers, counsel M. A. M., and T. E. A. Barthel.

When Mr. Clifton arose to speak, it was expected that he would say something concerning the future of the Association of Licensed Automobile Manufacturers, and he did so. He remarked that the decision adverse to the Selden patent had come at exactly the psychological moment to permit

Mr. Henry Ford to become the guest of the association at its banquet the night before, and thus had served to pave the way for the unification of the trade. Its members, Mr. Clifton continued, desired that the A. L. A. M. should live and remain as a strong organization of representative manufacturers able and willing to work in sympathy with the motor and accessory manufacturers, and he saw no reason why it should not continue so to do. Mr. Clifton then dilated on the importance of efficiency. He declared it was the need of the automobile industry and of all industries, and that it should be striven for zealously and unceasingly until it should stand out in every department.

Of the other speakers, Dr. Gould, former city chamberlain, dwelt with the history of

New York, and Mr. Raymond, the retiring president of the Motor and Accessory Manufacturers, spoke of the purposes and achievements of that organization, whose work he declared had little more than been started.

Clarence Harvey, the professional entertainer, then assumed the floor and for half an hour or more kept his audience in roars of laughter. He knew his book and the topical poem which he recited and which contained "hits" at many of the well-known men and products of the industry was of the sort to dispel inch-thick gloom; it was more than usually clever and amusing, as were most of the stories he told. When Harvey concluded, he made way for a high-class vaudeville show which added to the evening's entertainment.

Engineers' Banquet an Incident of Two Busy Days

Of all the trade organizations which have gathered in New York during last week, none kept itself so zealously applied as did the Society of Automobile Engineers. During all of Wednesday and Thursday, 12th and 13th, the members were kept occupied. They not only attended the annual business meeting and election and the annual banquet, but during all of Wednesday afternoon and far into Thursday night they listened to a long series of addresses and papers dealing with the developments and technicalities of their profession, all of the proceedings occurring in the assembly room of the Automobile Club of America. The subjects and those who dealt with them were as follows:

Electro Steel: Paper by Joseph Schaeffers.

Illustrations of Physical Facts Relating to Metallurgy: Address by Radclyffe Furness.

Influence of Multi-point Ignition on Output and Efficiency of the Internal Combustion Engine: Demonstration by Otto Heins (Bosch Magneto Co.) on the Dynamometer of the Automobile Club of America.

The Construction of Highways for Motor Traffic: Address by Logan Waller Page, United States director of good roads.

Leaf Springs, Design and Methods of Mounting and of Treatment by the Manufacturer and the User: Paper by E. K. Rowland.

Novelties in Valve Systems: Paper by E. P. Batzell.

Hot Rolled Gears: Paper by H. N. Anderson.

Commercial Gasolene and the Impurities That Are Being Encountered: Paper by F. H. Floyd.

The Test of a 20 Horsepower Franklin Air-cooled Motor: Conclusion of paper by L. R. Evans and R. P. Lay. Introduction by Prof. R. C. Carpenter.

Development of the Grinding Wheel: Paper by George N. Jeppson.

Methods of Grinding: Paper by John C. Spence.

"Frictionless" Friction Drive: Paper by Charles E. Duryea.

The Fire Protection Question: Paper by N. B. Pope.

Contest Rules That Affect the Engineer: Address by A. L. McMurtry, chairman of technical committee of American Automobile Association.

Automobile Contest Timing and Coaching: Paper by Chester S. Ricker.

Report of Standards Committee Division on Wood Wheel Dimensions and Fastenings for Solid Tires; Standardization Possibilities in the Commercial Car Field: By W. P. Kennedy.

Advantages of Long-Stroke Motors: Paper by E. A. Myers.

Foolproofing the Commercial Car Mechanism and Its Control: Paper by A. J. Slade.

Co-operation Between the Electric Vehicle Manufacturer and the Central Station: Address by Robert McA. Lloyd.

The Ampere-Hour Meter for Electric Vehicles: Paper by R. C. Lanphier.

Gasolene - Electric Transmissions for Heavy Loads: Introduction by Alex. Churchward.

The annual banquet of the Society of Automobile Engineers occurred on the 12th inst., and, unlike the general run of such functions, there were no post-prandial exercises. Such speaking as was done preceded instead of followed, the dinner, which was served in the assembly room of the Automobile Club of America, and the speaking itself was short and limited to three men. It was rather in the nature of god-speeding the parting president, Howard E. Coffin, and welcoming the incoming one, Henry Souther. Each made a short address, as did Henry Hess, who preceded Mr. Coffin in the presidential office. After the dinner had been brought on and disposed of, a program of moving pictures and vaudeville entertained the assemblage, which numbered more than 300 members and guests. The proximity of the Automobile Club's garage to its assembly room enabled a pair of the vaudevillians to perform an act that startled most of engineers, the actors, one a female impersonator, suddenly dashing into the room in a live and full-grown taxicab, and creating something akin to consternation.

Original Odometer Is Rediscovered!

Somebody with a mind for historical research work recently discovered among the writings of the Roman Vituvius a description of a combined speedometer and odometer which was in use at the time of Christ's birth. This Roman writer tells of a method of measuring the distance traveled by a vehicle. Gearing was so arranged that as one Roman mile was traversed, a pebble or a ball was dropped into a brazen pot,

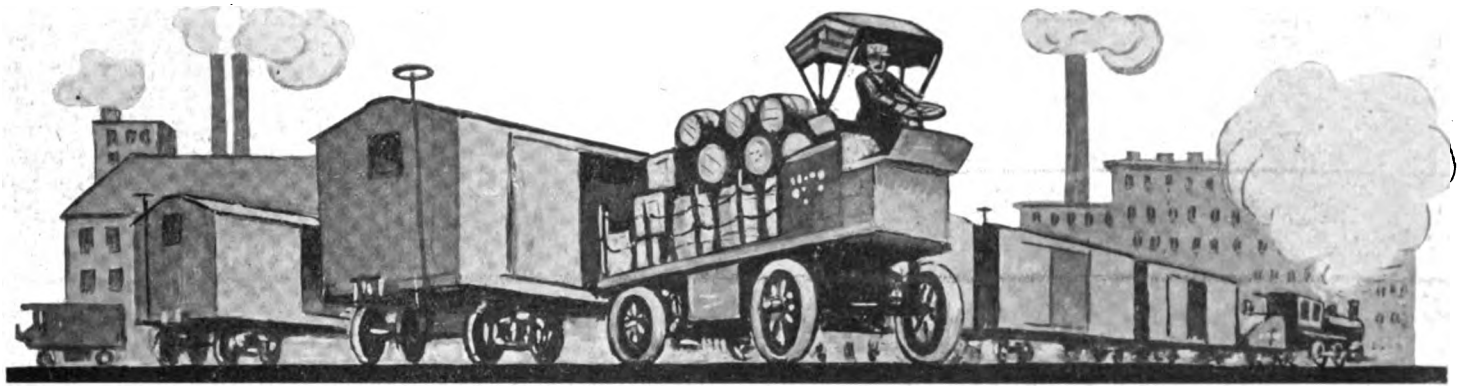
this giving an audible notice of the end of the mile; this, with the hour glass, gave the speed indicator, and when the day's journey was finished, the distance was found by counting the pebbles in the brazen pot. The instrument also was used for measuring distances at sea, a paddle wheel being fixed on one side of the ship to turn the gearing. Although the arrangement was crude, the result was perfectly satisfactory to the people of 20 centuries ago.

Motor Trucks to Replace "Borax" Mules.

Borax of the "Twenty-Mule Team" kind soon will cease being hauled by the more or less gentle quadrupeds which have served to advertise that brand all over the country, for several 95 horsepower trucks have been ordered for service in the dreaded "Death Valley" whence the borax is shipped in immense quantities. The borax company expects by the introduction of the motor cars to eliminate the water problem

ANNUAL BANQUET OF THE MOTOR AND ACCESSORY MANUFACTURERS IN WALDORF-ASTORIA HOTEL, NEW YORK, JANUARY 13.





THE TRUCKS IN THE GARDEN

They Present a Formidable Front and Disclose the Far-reaching Progress that has Been Made in the Manufacture of Commercial Vehicles, both Large and Small—Part II Proves to be Not Wholly a “Man’s Show.”

If Part I of the so suddenly unsoldenized show in Madison Square Garden, New York, was a top-notch, it follows that Part II is no slouch. The turning of the page—the transition from pleasure cars to business vehicles—was accomplished between 11 o'clock Saturday night last, and 8 o'clock Monday evening when Part II officially was thrown open to the public. The almost overnight transformation was a mighty task, but the show managers were equal to it. The 67 exhibits of pleasure cars were removed and some 75 exhibits of accessories went with them, and as they went out, 33 exhibits of vehicles, many of them ponderous trucks, were moved in, and this without reference to 18 exhibits of motorcycles and about a dozen displays of accessories which also were installed. There were scores of signs to be taken down and replaced by other signs. There was much carpeting to be relaid and a thousand and one other things to be done, and all was done and well done, too.

The setting of Part II, of course, differs in no wise from the setting of Part I. Wistaria still hangs in the lobby of the Garden, and the great white latticed terraces in the great main hall still remain—apparently none the worse for the week's wear. But there are some great gaps where accessories once were displayed and ingenuity has been taxed in the endeavor to fill the voids. It is responsible for a more or less historic display of bicycles—a genuine hobby horse, an old “boneshaker” with gaspipe frame, wood wheels and steel tires, and several types of “high” bicycles, the spidery sort which cause men who once perched on them to wonder how they did so and remained to tell the tale—and buy

automobiles. It is a display which causes the memories of many men now fat and rich and prominent in the automobile trade to hark back a quarter century or so to the days of their youth. The effort to fill the breaches has even brought some gasoline pleasure cars, or rather cars that once gave pleasure, into the Garden, but—they are not new cars. By courtesy they also are termed “historic,” but their history is of recent manufacture, and the result of individual effort. There is a Locomobile that won the Vanderbilt cup, and the Alco that did likewise; there is the Chalmers that won the last Glidden trophy; there is the Green Dragon racer with which Oldfield once earned shekels, and there is the Locomobile which only last year conveyed Mrs. Harriet Fisher around the world; it is present with all of its original traveling trappings, including a weather-worn tent which is set up alongside the car. The oldest and most truly historic vehicle in the little collection is the original Pierce, a little one-lung, air-cooled buggy with wire wheels and single tube tires.

Although Part II popularly is styled a truck show, it also includes pleasure cars that paid to enter and are not merely “historic guests.” There are not many of them, however, and they are electrics; they are displayed side by side with big trucks bearing the same names. No effort was made to segregate the exhibits of electrics; they are interspersed with the gasoline vehicles.

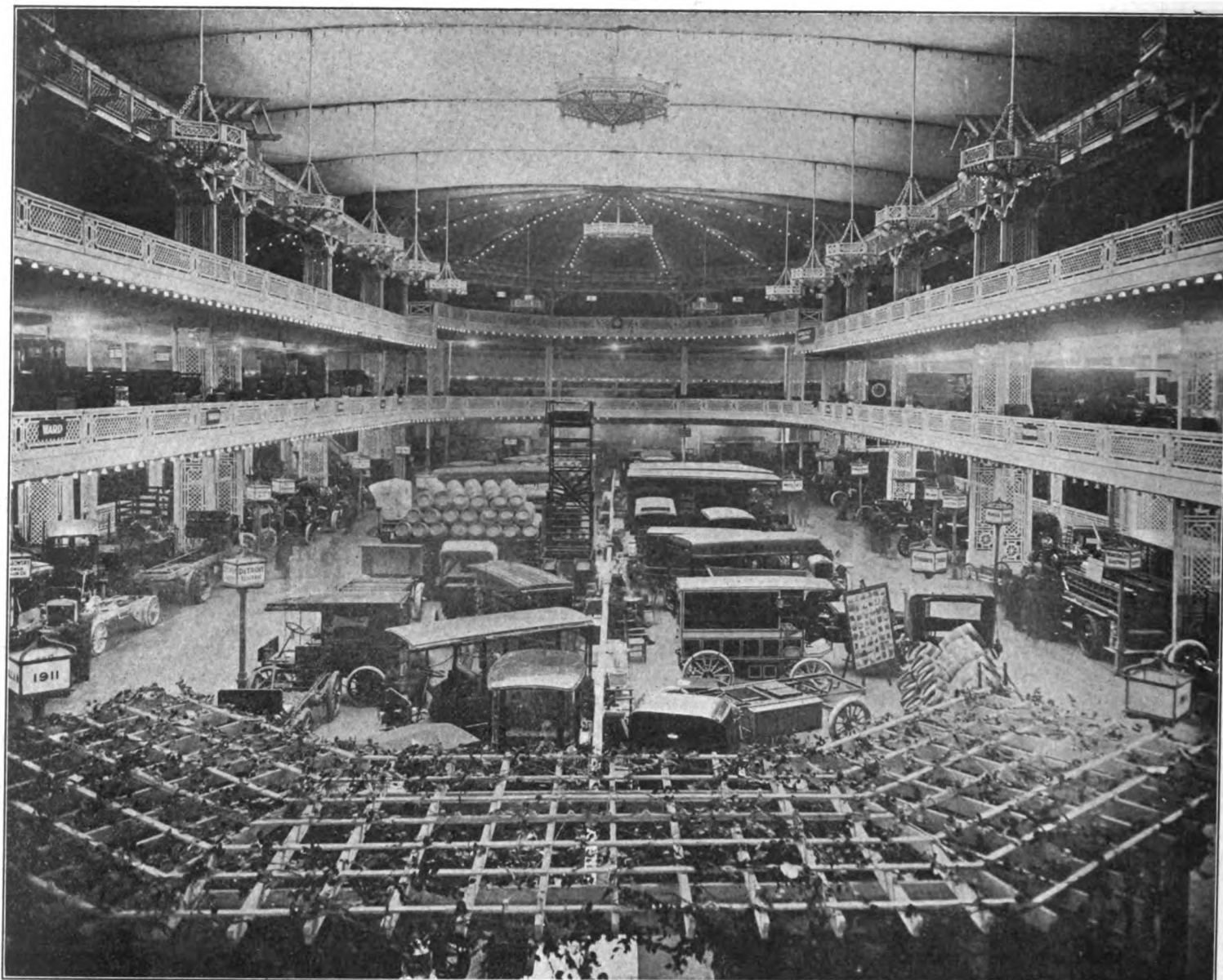
Because of its nature it was anticipated that Part II would prove essentially a “man’s show.” It was not supposed that the eyes of womankind, which the previous week had feasted on snow-white and baby blue runabouts and touring cars, and on

luxurious limousines, would have eyes left for staid and lumbering trucks. But anticipations were vain, for womankind has been very much in evidence each evening; not so numerous as the week before, but still numerous and well dressed, and there are truck salesmen in evening dress to gaze at her exactly as did the sellers of limousines who also wore open-faced coats. What she finds to interest her is difficult to say, unless it be the fire engines, the ambulances, the armored bank car or the “tower” wagon which uprears itself like a cupalo; for even to the casual man these vehicles at least hold that interest which is born of curiosity.

The attendance has been surprisingly large. During each afternoon the building has been well filled; during the evenings it has been crowded, although on Wednesday there were indications that it was tapering off. Of the results of the show it is too early to speak. There seems a lot of “business talk” in the air, and a number of agencies undoubtedly are being closed; there have been reports of several “large deals” having been made, but nothing is reliably known of them.

Hitherto what commercial vehicles have appeared at automobile shows have been shown in an incidental way; they have been tucked off in a corner, so to speak, so that those who were particularly interested might have opportunity to see them, but in such a way that the average visitor was quite as likely as not to pass them by with hardly more than a glance. Therefore, the present exhibition is in the nature of a striking revelation.

If, as everyone now seems ready to declare to be the case, the motor truck really



GENERAL VIEW OF THE TRUCK SHOW IN MADISON SQUARE GARDEN

has arrived, it is evident that its approach cannot have been a matter of a few short weeks or months; the machines on view, without exception, belie such a notion. Therefore, its development must have been going on for a greater length of time than generally has been supposed. Those who are familiar with the inner workings of the automobile industry know this to have been the case. But to the general public the completeness and finish of the exhibits, the very evident efficiency of the machines on view, stands as a distinct revelation; a revelation that is rendered all the more impressive when it is learned that where the builder of pleasure cars sells a single machine to a single customer, the builder of trucks sometimes disposes of a dozen cars in a single sale, and that counterparts of some of the machines on view already are at work in and about New York City itself in installations ranging from one or two cars up to a score or even more.

But the real impressiveness of the show

depends upon the huge size of the vehicles. Few people outside the commercial branch of the industry ever stopped to think before how much real automobile is necessary in order to haul ten tons of merchandise over the common highway, all at once, or even five tons, or three, or two, or one. The quantitative element of the commercial vehicle becomes noticeable as never before, now that the trucks are staged to advantage; also the qualitative element. For it is now apparent that considerable structural differences exist between the well-made pleasure car and the well-made commercial.

For example there is the matter of the governor. In touring car practice the governor has almost disappeared. With the commercial vehicle, on the other hand, it has become a necessity in the eyes of a number of designers, for the reason that it automatically prevents the truck driver from overspeeding the machine when running light. Some of the modern engine

governors are placed under lock and key, others are sealed. For the most part they are of the ordinary centrifugal type, but in at least one instance the well-tried principle of the hydraulic regulator is in use.

Another point in which truck construction differs from that of the ordinary types of pleasure car is in the springing. Truck springs, besides having a great number of leaves, commonly are set with a relatively large amount of camber, and, in proportion to their loading strength, are rather shorter than those employed on passenger cars. Also in many instances, secondary springs are in use which clear the axle under ordinary circumstances, being attached to the chassis only, but which come into service when the body is loaded down.

Rather a new angle in the suspension problem is reflected in the use of supplementary suspension for the motor only, or for the motor and change gear. The point is that when the vehicle is unladen the main springs necessarily are so stiff as to be

practically without resilience. This unresponsive quality is accentuated by the use of solid tires, so that the vibration that the power plant has to withstand is very severe, however easy the suspension may be under load. To obviate the difficulties which frequently result in the moving parts of the power plant from such vibration, several of the makers now are providing independent suspensions, one even going to the extreme of putting the entire power plant and the driver's cab on a set of independent springs. In many other cases the radiator is separately hung on one or another form of spring seat.

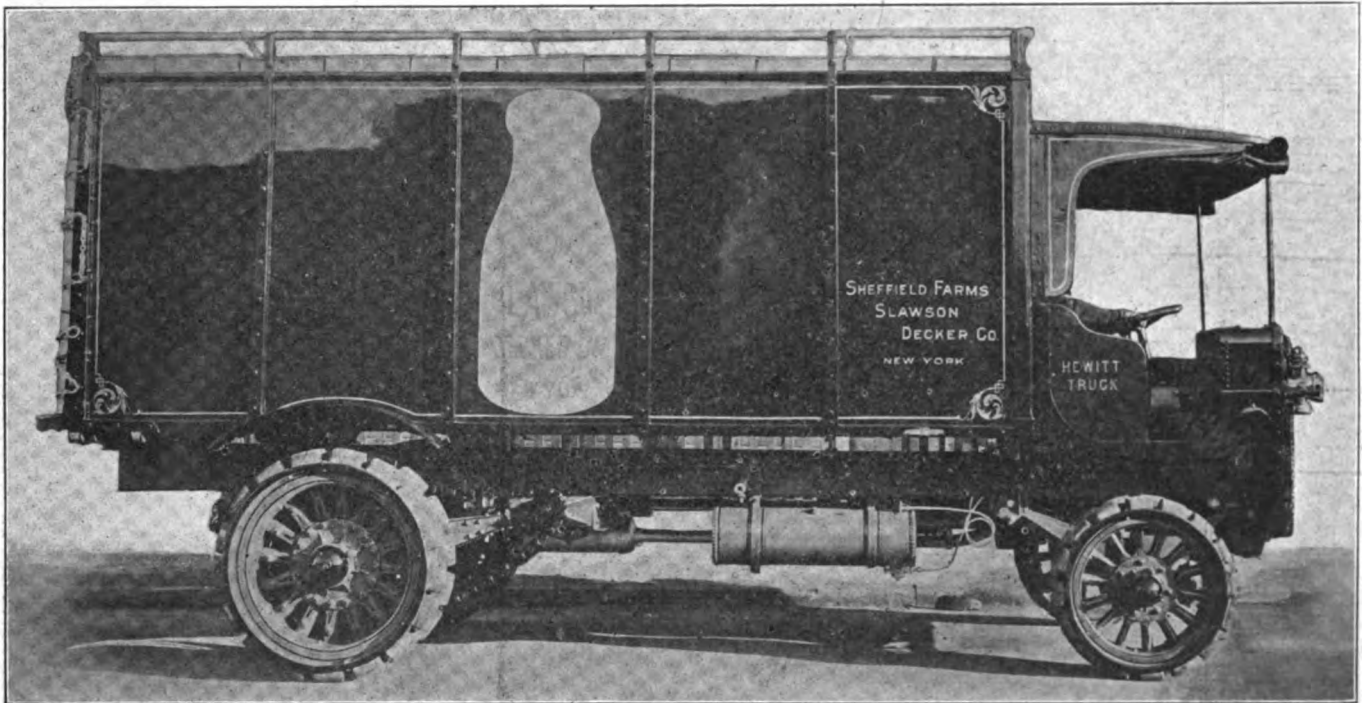
Still another novelty, and one practically

connection with the engine, so that they will turn together instead of differentially when one of them is held fast in the mud. No less than three different methods of accomplishing this are to be seen in the show.

Engines and change gear systems in general are much the same in appearance in commercial and pleasure car service. But close study reveals the fact that they possess many points of inherent difference. The motors uniformly are built for slower average speeds and have heavier cylinder walls, heavier moving parts and more ample jacket and radiator capacities. The principles involved in engines and in transmissions as well, are the same as already are

commercial vehicles, will see in the latter, not the big brothers of the touring car and the runabout, but a different breed of the same general family or order of creation entirely.

Such familiar refinements as dual ignition systems, self-contained oiling systems, selective gear-changing systems, simple control mechanisms and equalized brakes prove the high order of construction that has been attained. Other evidence in the same direction is afforded by the numerous special types of vehicle, as well as by the tilting bodies and other schemes for facilitating loading and unloading that are to be seen. Altogether the show is of particularly time-



THE LARGEST COMMERCIAL VEHICLE IN THE GARDEN—HEWITT 10 TON TRUCK

unknown in pleasure car practice is the differential lock, whereby the operator may render the driving wheels rigid in their

familiar. But the visitor who is thoroughly posted on pleasure cars, while perfectly able to recognize the different organs of the

ly value as a demonstration of the individuality of the business automobile as an element in the motor world.

The Gasolene Vehicles Displayed; Their Characteristics and Originalities

The biggest car in the show, and one of the most ingenious in many ways is the Hewitt ten-ton milk wagon, which is one of a type that has proved very successful despite its huge size, which, obviously, is against it somewhat, when the condition of the average American highway is considered. The large Hewitt truck remains much the same as in the past, which is to say that it is equipped with an original four-cylinder motor and planetary change gear, its builder being one of those who place great faith in the excellence of that type of transmission, as compared with the less easily handled sliding pinion type. New points that are to be noticed on the truck that is on view, however, include a slight increase in power, the stroke having been increased to 6 inches, while the bore re-

mains as before, at $4\frac{1}{4}$ inches; the circulating oiling system and the new style carburetter.

The engine, it may be mentioned, is formed of paired cylinder castings, and the air intake to the carburetter, which is of the Venturi tube pattern, is taken from an aspirating tube near the exhaust pipe around the back of the rear cylinder casting in a passage which is cored out of the latter. The float chamber is small and the regulating devices very compact. The mixture is led across the motor, between the cylinder casting to the intake, which is on the left side. The cylinders are cast in L form, and all parts are thoroughly accessible, from the magneto and governor mechanism, to the valves, access to the motor, which is mounted in the center of

the cab, being obtained, when necessary, by lifting one or both of the two individual seats entirely out of the chassis, special provision being made to render them easily detachable.

The chassis has 138-inch wheelbase, 36 x 5-inch dual block tires in front and 44 x 7-inch dual block tires in the rear. As is required by its enormous capacity, it is given a jumbo type of semi-elliptical suspension that would do credit to a locomotive.

An entirely new member of the line is the one-ton model, which just has been brought out, and which differs in many respects from former Hewitt practice, besides being in many ways a novel vehicle. It is equipped with a four-cylinder block motor, which is mounted in front, its covering or hood coming up through the cen-



ANOTHER GENERAL VIEW OF THE TRUCK EXHIBITS SHOWING THE GALLERY DISPLAYS

ter of the footboard, and leaving just room for the driver's and helper's seats. The motor is patterned closely after the style of the Everitt 30 touring car, although it is built especially for its present use. In other words, its cylinders, manifolds and the upper section of the crankcase are combined in a single casting, most wonderful intricate, whereby the number of separate parts in the motor is reduced to a surprisingly small number. The cylinder dimensions are $3\frac{1}{4} \times 4\frac{3}{4}$ inches, bore and stroke, and the rated output is 16.9 by the A. L. A. M. formula. A cone clutch is used, and the power shaft is led back to a combined selective change speed gear and differential unit in the waist of the chassis, which is formed after the rear axle construction of the Everitt car. The wheelbase of the new machine is 94 inches, and it is shown with pneumatic tires of $36 \times 3\frac{1}{2}$ and 36×4 inches dimensions.

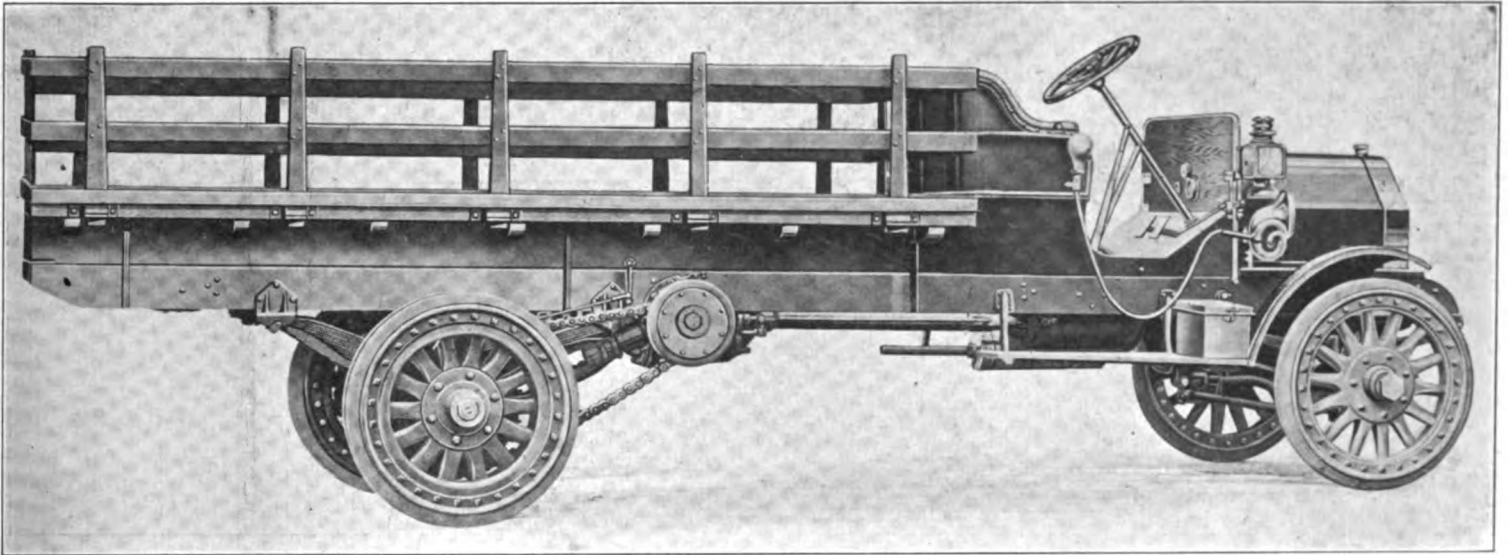
There is also shown a chassis of the two-ton Hewitt truck, which is equipped with

an opposed motor of 24 horsepower rated output, planetary change gear and side chain drive. In many respects this vehicle is most original, particularly in respect to the method of controlling the speed changes by means of pedals and the long lift and large pipe area which pertain to the thermosiphon cooling system. The wheelbase of this particular model is 112 inches, and it is shod with 34×4 -inch solid tires in front and $34 \times 3\frac{1}{2}$ dual tires in the rear.

The new Stearns truck, which is rated broadly at three to five tons' capacity, possesses one of the most novel solutions of the spring problem to be found in the show and on which, besides being entirely original, appears to be thoroughly practical. As is not uncommon practice, both the engine, which is of the block type and similar in general construction to the motor employed on the lighter model of the Stearns pleasure car, and clutch, steering gear and transmission, are mounted on a sub-frame. In

this case the radiator, hood and cab, including the dash, footboard and driver's seat also are carried on the sub-frame, which is entirely independent of the main frame. It is supported in the rear on bearings which are carried by the countershaft. In front it is supported by semi-elliptic springs which lie just inside the main frame and are supported at their centers by brackets which protrude from the main frame sills. The supplementary springs are sufficiently flexible to give yielding support to the sub-frame and its load at all times, so that the active mechanism of the power plant is entirely relieved of the heavy shocks which result when the machine is run without load.

The motor, which is rated at 35 horsepower, is of $4\frac{1}{2} \times 5\frac{1}{4}$ -inch cylinder dimensions. It has Bosch dual ignition, continuous feed lubrication with splash distribution, and drives through the Stearns type of dry disk clutch. The change gear system, which is of the three-speed selective type, is combined in a unit with the counter-

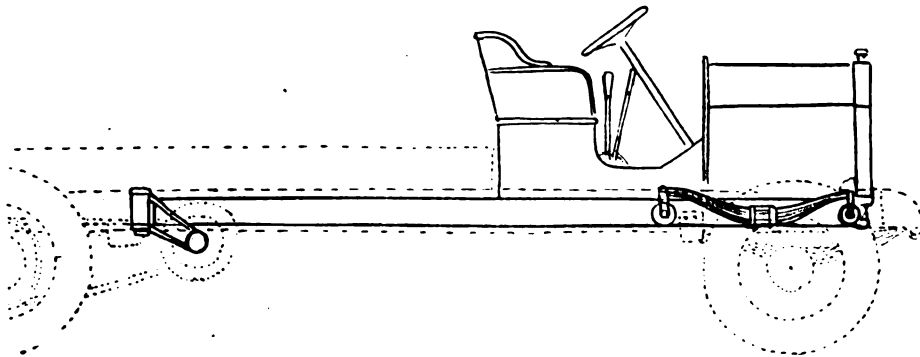


THE NEW STEARNS THREE TO FIVE TON 35 HORSEPOWER TRUCK

shaft and differential mechanism, the construction in its outward form and general solidity being broadly suggestive of the

side the driving sprockets on the extremities of the countershaft. The rear wheel brakes, like the foot brakes, are of the expanding

also of the solid pattern. The wheelbase of the machine is 12 feet, and its over-all length 19 feet. For special requirement, however, an extra length chassis is produced which has a 15-foot wheelbase.

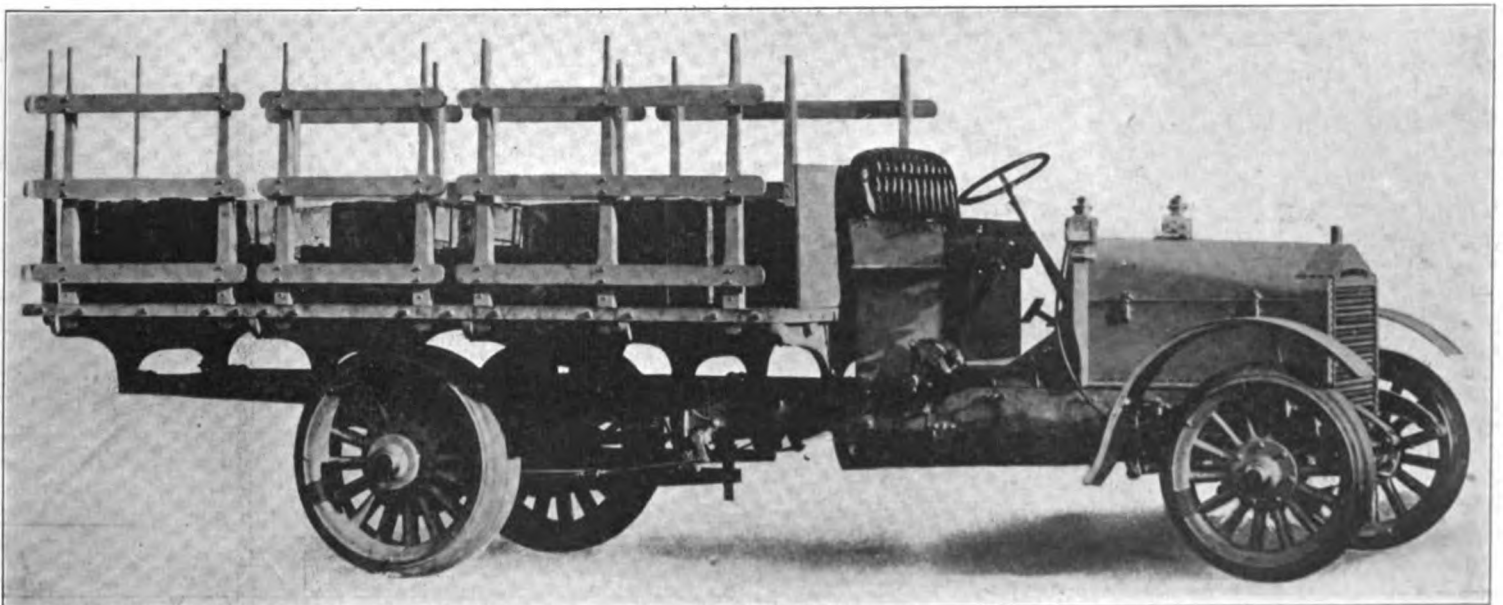


STEARNS SUB-FRAME SUSPENSION SYSTEM

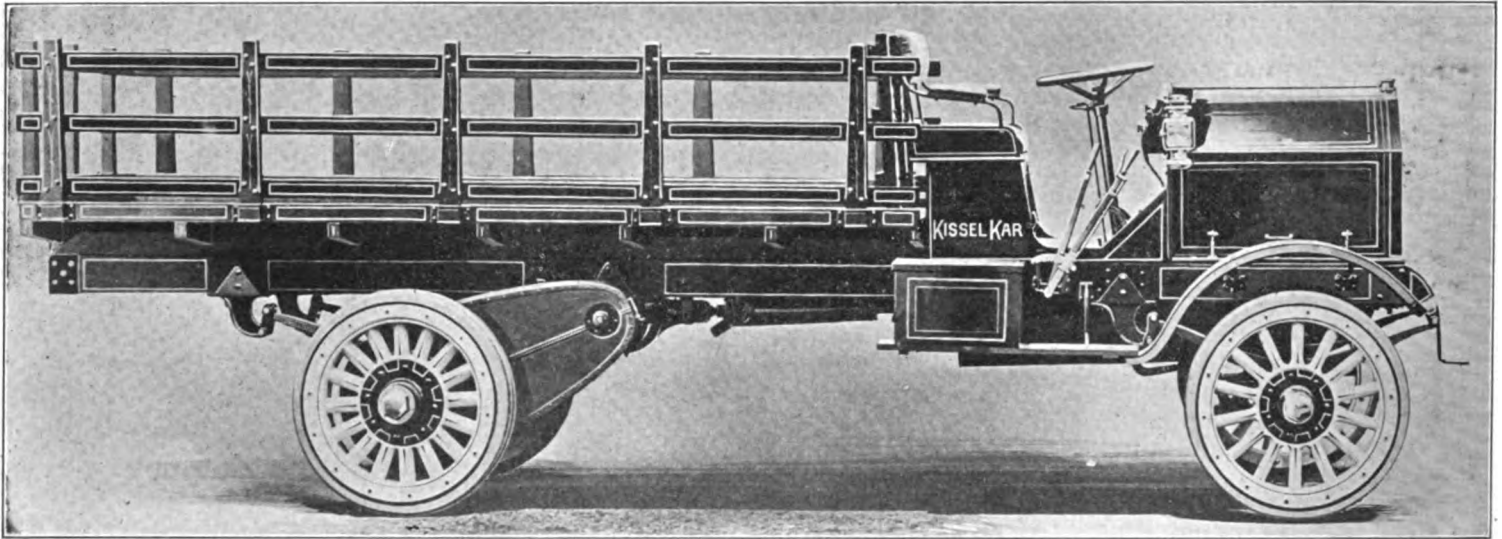
staunch rear axle, which is used on the lighter pleasure cars of the same origin. The service brakes, which are of two-inch face, mounted on 14-inch drums, are carried out-

pattern, and operate in 17½-inch drums bolted strongly to the rear wheels. The latter are shod with 38 x 4-inch dual tires; the front tire equipment being 34 x 5 inches,

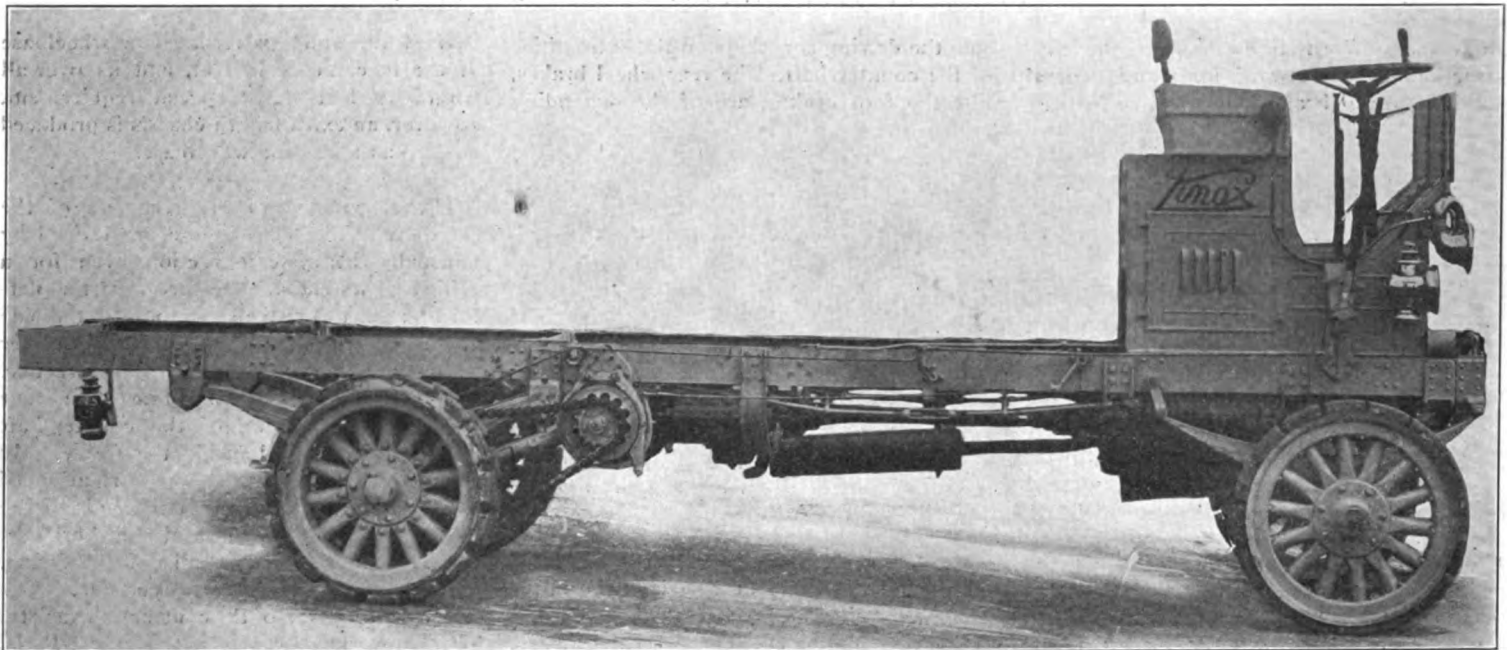
The suspension of the rear end of the three-ton White chassis is characterized by unusually heavy construction even for a vehicle of its class. The three-quarter platform pattern of spring is employed, the side members being placed under instead of over the axle. Also, contrary to usual practice, the radius rods, which are attached in front to the stout housing of the countershaft group, are mounted inside the frame. By virtue of close design in the formation of the brackets, which support the ends of the countershaft, the service brakes are brought directly under the side rails of the frame, instead of protruding at one side. The service brakes are of the contracting variety. The emergency brakes in the rear wheels.



THE NEW PIERCE-ARROW FIVE TON 38 HORSEPOWER TRUCK



THE NEW KISSEL, THREE TON 50 HORSEPOWER TRUCK



THE KNOX FIVE TON 40 HORSEPOWER CHASSIS



THE WHITE 3,000 POUND 20-30 HORSEPOWER TRUCK

on the other hand, are of the internal expanding type. The White engine is of the block type, very neatly and effectively designed with the idea of enclosing all working parts. The gearset is of the selective pattern, affording four forward speed, the highest being geared up.

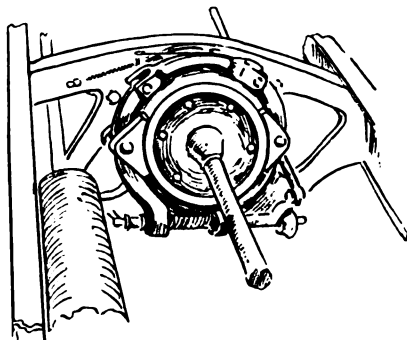
White commercial vehicles are made in a variety of types, the same engine being used in the 3 and 1½-ton sizes, and also in the delivery wagon style of construction, which, instead of the true truck chassis, has a mounting more nearly in line with that of the standard touring car, save that it is longer and suspended in a different manner. One of the features of the exhibit is the large dumping body, which has an original tilting mechanism which a combination of rollers, inclined plane and winch and cable is used to upset the load with a minimum of exertion.

The most striking feature of the new Pierce-Arrow five-ton truck, which is shown for the first time, is its rear axle, which, contrary to precedent in the construction of heavy automobiles, is of the floating type, with worm reduction gearing. That this machine also embodies the first application of the worm drive principle to such heavy duty is another point which renders the vehicle of more than passing interest. The axle is particularly massive, so massive, in fact, as to leave no possible question as to its durability, though the element of its weight would be likely to provoke criticism were it not that the machine is exceptionally heavy in every other respect as well. The worm affords a reduction of something like eight to one, and is amply safeguarded in the way of radical and longitudinal thrusts by the use of very large ball bearings.

Unlike some new vehicles, it may be said without fear of question that the Pierce truck is new from end to end, which is another way of saying that it reveals points of original design from one end to the other. The frame, for example, is cross-stayed entirely by means of tubular members, a saving in weight thus being accomplished, while the method of connection between the sills and cross members is such that a small amount of rotative freedom is given at each point, so that the frame may weave without being strained. The central cross member is the only one that is not of tubular form, barring only the diagonal braces over the axle, that member being of heavy pressed steel form and adapted to support the rear of the selective sliding gearset and also to absorb the stresses of the service brake, which is of the locomotive or double-shoe pattern, actuated by cam movement and very strong.

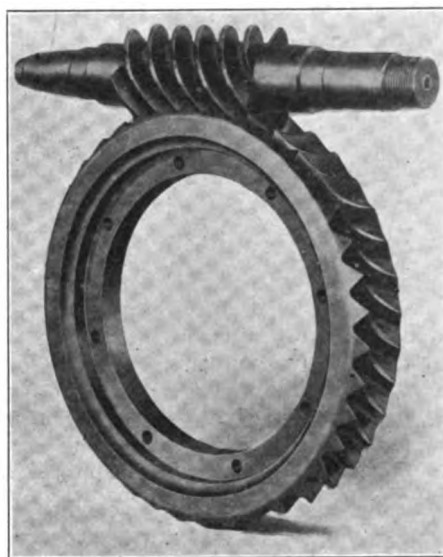
The master clutch is of the cone type, fitted with cork inserts, and it is actuated in conjunction with an interlocking device to prevent stripping of the gears, which is similar in form to that used on the Pierce-Arrow touring cars. The propeller shaft

between the gearset and the rear axle is provided with two universal joints, while the position of the axle is assured by means



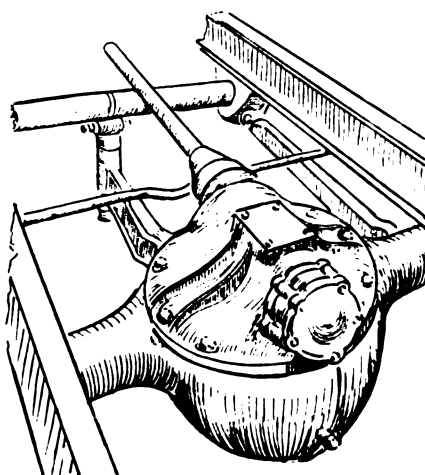
PIERCE SERVICE BRAKE

of a large torsion rod or bar, which is placed immediately beneath the shaft, and



PIERCE WORM DRIVE

by a pair of radius rods, which are placed under the side frame members, hinged at



PIERCE REAR AXLE CONSTRUCTION

the rear end and linked in front to the brackets which support the countershaft. Semi-elliptic springs are used all around,

those in front being unusually short and thick. The flat appearance of the rear members in the demonstrating chassis is due to the fact that they are purposely set in the shape they assume when the chassis is fully loaded.

The motor is of the four-cylinder vertical pattern, cast in pairs and in T-head form. It is hung from the main frame by means of steel girder members, which give a certain amount of suppleness to the mounting. It is equipped with a throttling governor. Double ignition is used, as is the standard form of engine lubrication, which the Pierce-Arrow Motor Car Co. has used for a number of years, the feed being by gravity from a tank on the level of the cylinder heads, and overflow return by means of a pump and filter system. One of the original points of the machine is the radiator, which is of the horizontal tube pattern, built with cast brass headers, which have separate closing plates bolted in place. The tubes are expanded into the headers and afterward soldered, the general construction being similar to that of a surface condenser. The wheelbase of the truck is 13 feet, and the tire sizes are 36 x 5 in front and 41 x 5½ dual in the rear.

Differentials are so made that a motor car can be driven around a corner without one or both of the rear wheels being forced to slip, because they travel on arcs of different radius. But the average differential mechanism possesses this drawback, that it will differentiate whenever unequal resistance is opposed to the movement of the two wheels. When it happens that one of the wheels is stuck in a mudhole, this becomes a serious disadvantage, inasmuch as it prevents the wheel which is free from securing proper traction. To prevent the idle spinning of the free wheel, several truck builders have provided locking devices whereby the rear axle, or more frequently in the case of heavy vehicles, the countershaft, may be rendered absolutely rigid temporarily.

A noteworthy example of this practice at the show is the new Kissel truck, which is a three-ton machine in which the temporary locking of the differential is accomplished by means of a pedal instead of by the more ordinary hand adjustment, which must be made from the side of the machine. When the pedal is depressed, the floating member of the differential is locked to the outer shell so that the entire contrivance rotates without internal movement. When the pedal is released again, the parts are unlocked and are free to resume their normal functions.

In general the new truck is of standard design and construction, which is much the same thing as saying that it has a four-cylinder vertical motor mounted in front of the driver's seat, sliding gearset, selectively actuated, shaft drive to the countershaft and side chain transmission to the wheels. Points of individuality are revealed in many

quarters, however, as in the provision of a fourth speed in the transmission which is intended solely for use when the vehicle is returning to its loading point. This permits it to be run at a maximum speed of 15 miles an hour, whereas under load it is not expected to make more than 12 miles an hour, which generally is considered about a maximum safe speed for heavy vehicles.

show in which it is applied to the purposes of the commercial vehicle, but the reputation of its maker is such that its adoption conveys far more than ordinary significance. The machine in question is the Garford, which, though not a new car by any means, makes its first appearance within the precincts of a New York show at the present time. Friction drive, as worked out by the

chassis, the pressure on them is equalized so that the driving load is equally divided between the two rear wheels which they drive by means of the side chains. By this arrangement the amount of pressure used in driving may be graduated to the exact requirement of the load and of the highway, while the mechanism itself thus is saved much needless wear. The changes of speed are obtained by means of a side lever which serves to draw the driven disks toward or away from the center of the driving disk, thus altering the point of contact between the friction members. The operation of the machine thus is rendered exceedingly elementary, especially as the reverse movement may be used for braking purposes if it has a $3\frac{3}{4} \times 5\frac{1}{4}$ -inch motor rated at 40 horsepower; the smallest size, the one-ton truck, which is exhibited in the form of a specially finished chassis, has a $4 \times 3\frac{3}{4}$ -inch motor, rated at 26 horsepower. In the framing both of the chassis and the change gear, which requires special bracing, especial care has been exercised to secure ample strength, the use of cast-steel girders in the transmission mounting being a distinguishing feature.

The wheelbases for the two sizes shown are respectively 95 and 116 inches, for the one and three-ton chassis; the tires, in the same order, are 34×3 and $34 \times 3\frac{1}{2}$, and 34×4 and $34 \times 3\frac{1}{2}$ inches dual. Dual ignition is provided on all types, as is the self-contained pump method of engine oiling.

The interesting thing about the Garbowski type of commercial vehicle is that the power plant, including both the double

The motor is of the L-head type with valves on the left. With the change gear it is mounted on a sub-frame, and so suspended that it is relieved of excessive racking stresses even when the vehicle is running without load and when, in consequence, the main springs are practically rigid. Ignition is double, magneto and the Atwater Kent single spark system affording the sources. The clutch is of the leather-faced cone variety, with relieving springs placed beneath the leather. The brakes are placed on the extremities of the countershaft and in drums which support the sprocket rings on the two rear wheels. The service brakes, first mentioned, are balanced by means of a beam extending across the frame. The expanding emergency brakes are actuated by a simple form of rocker shaft just back of the countershaft and differential group. The main spring suspension is semi-elliptic, the rear members, which are assisted by heavy radius rods, coupled to the frame by means of ball and sprocket joints which ensure perfect freedom of motion to the frame on uneven roads, are well cambered and are built up of 12 leaves, beaded in the center to prevent disalignment. The wheels are shod with 36×4 -inch tires, the rear members being of the dual type, the wheelbase is 144 inches and the rated horsepower 50, the cylinder dimensions being $4\frac{7}{8} \times 4\frac{3}{4}$ inches, bore and stroke respectively.

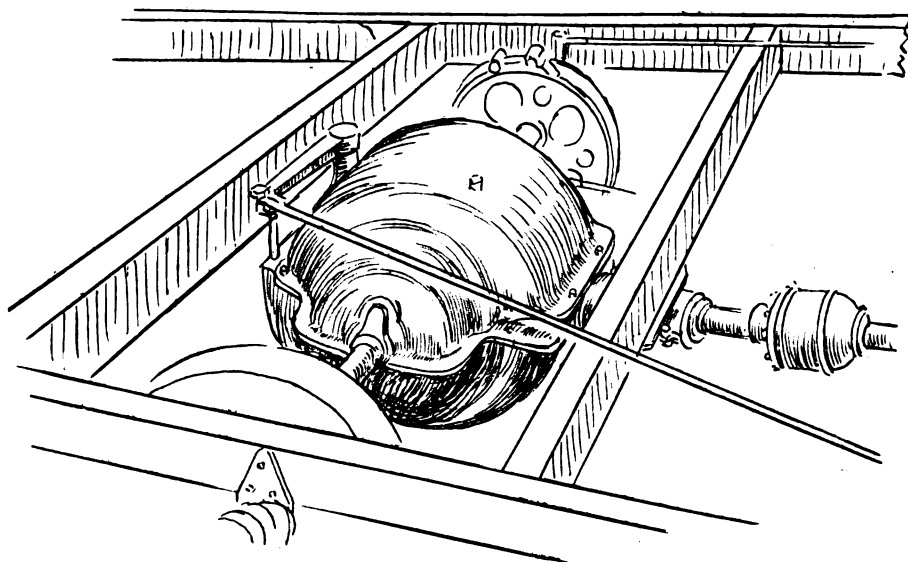
Although the principle of friction transmission is widely known and in pretty general use, but one car is on view at the

Garford designer necessitates the use of four disks, three for forward and three for reverse drive, the two countershaft members being employed to balance the necessary pressure and also to obviate the need of a differential mechanism. To apply either

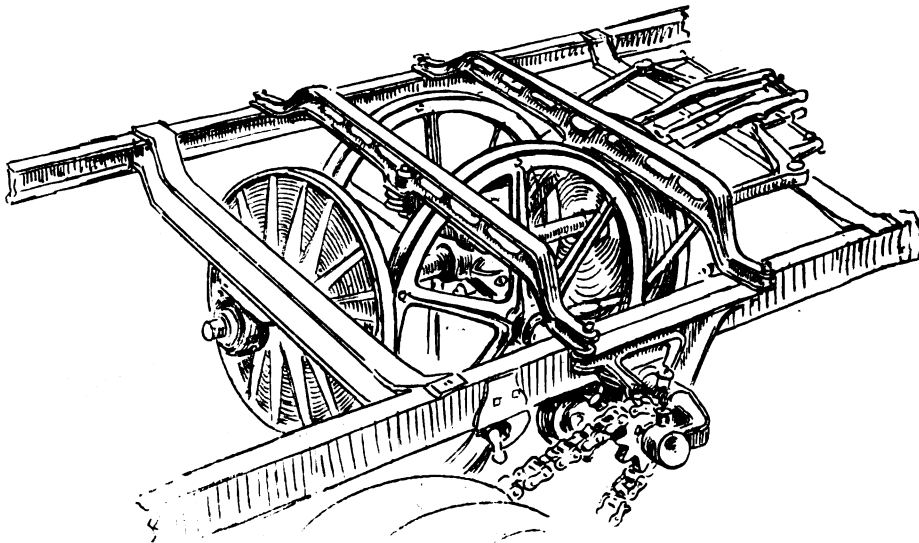
the forward or reverse drives one of the two pedals is depressed, the effect being to force either the forward or rear disks on the propeller shaft into contact with the two driven disks that are mounted on the countershaft.

As the countershaft ends are supported in a compensating bearing in the center of the

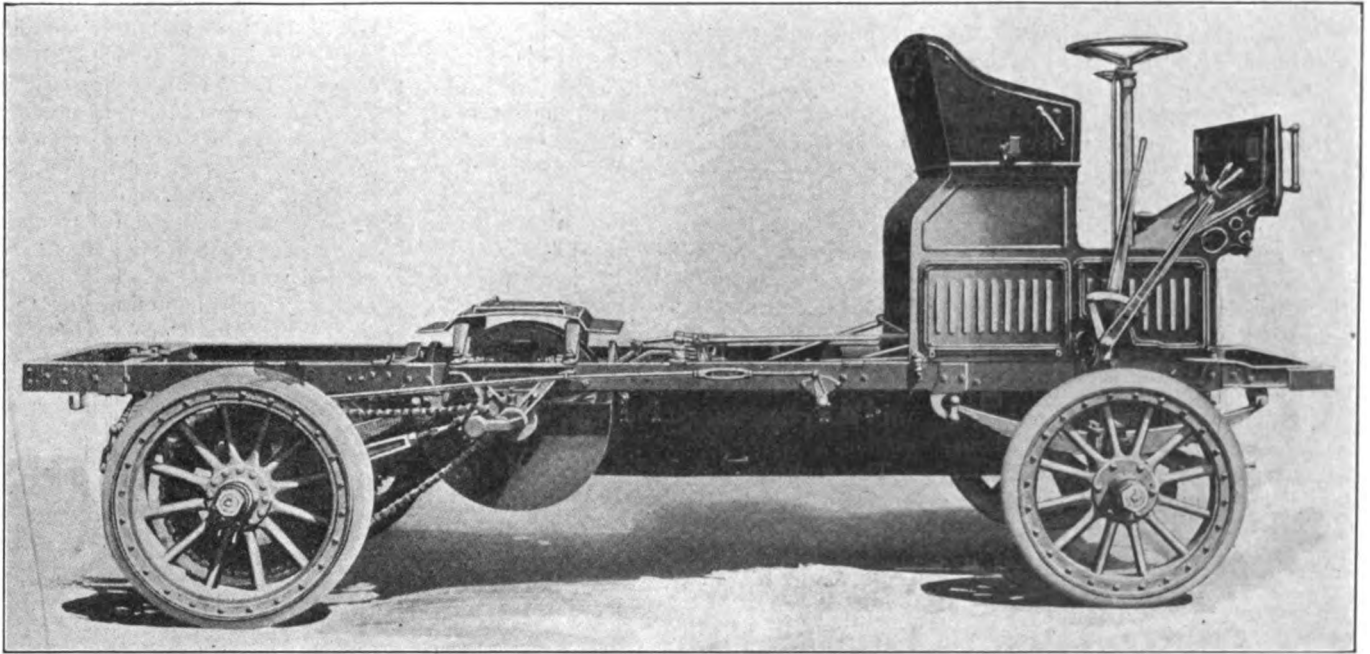
opposed motor and the transmission, is readily removable from the front. Two sizes of engine are made, and either may be used in any of the several styles of chassis that are produced for various purposes. The smaller motor is rated at 30-35 horsepower, and has cylinders $5\frac{1}{2} \times 5$ inches dimensions. The larger motor is of 6×5



KISSEL PEDAL-OPERATED DIFFERENTIAL LOCK



DETAILS OF GARFORD DUAL FRICTION TRANSMISSION



THE GARFORD ONE TON 25 HORSEPOWER FRICTION DRIVE CHASSIS

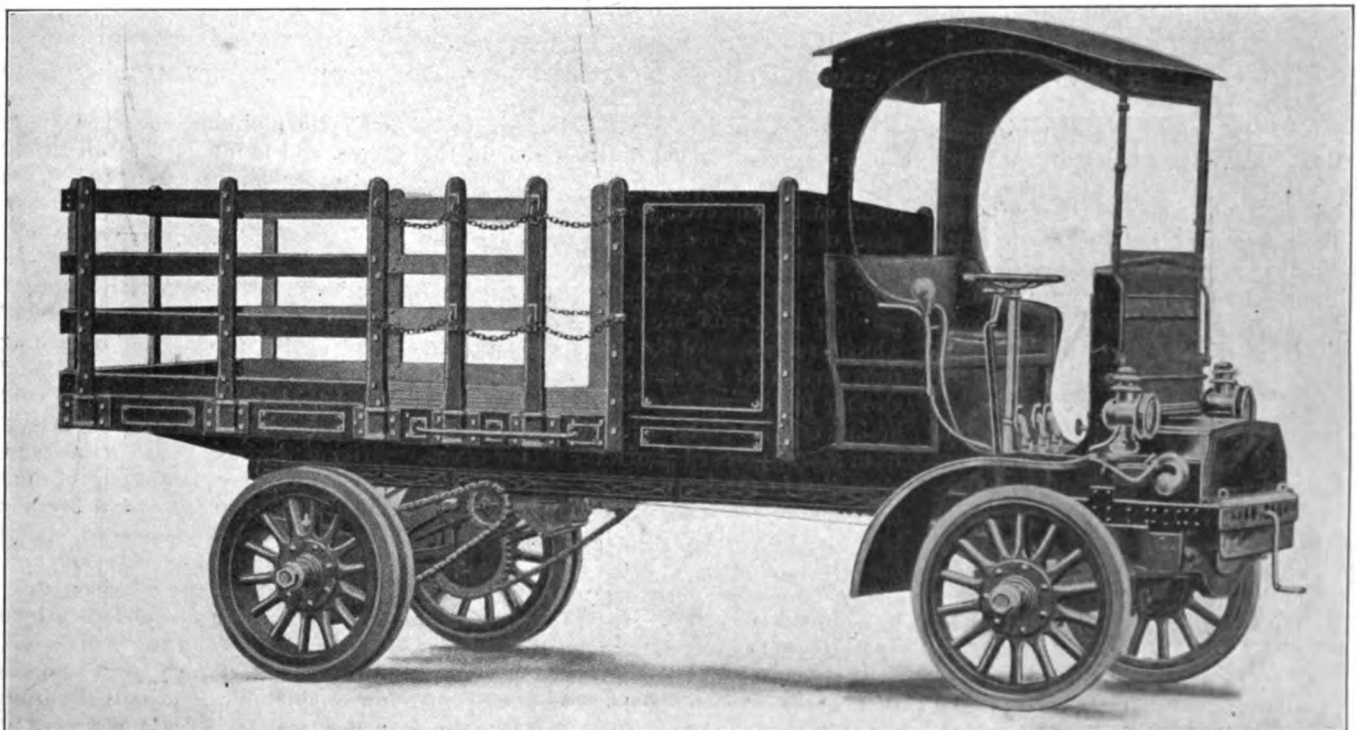
inch dimensions and is rated at 40-45 horsepower. They are of the horizontal-opposed type and with all their auxiliaries are mounted on rails which slide into the chassis on the regular sub frame.

One or two new points that are observable in the standard chassis at this time are a new arrangement of the ignition wiring and a stiffening bracket which supports the vertical, timer and oil pump shaft and prevents it from getting out of line. Formerly the ignition connections were made through a set of four contact fingers in the rear of the plant, the contact being secured

automatically when the motor was thrust into its proper place. The new arrangement places all the wiring in plain sight and at the front of the engine, connection between the stationary battery and coil connections and the timer and plugs being made by means of a multiple contact plug not unlike the familiar telephone jack.

With a long record of successful performances to its credit, the Locomobile Co. of America has entered the show with two heavy delivery wagons of the motor-in-front type, one of which is designed especially

for newspaper delivery service—a class of work which is particularly exacting in its demands, as it requires all-weather service on a close time schedule, and usually involving fairly high rates of speed. Both machines are rebuilt touring cars, and it is explained that the company makes a specialty of supplying such chassis to customers who require reliable high-speed delivery. The cars are thoroughly rebuilt and are sold under the same service guarantee as the entirely new pleasure cars. One of the cars shown is of 30, and the other of 35 horsepower. It may be added



GRABOWSKY ONE AND ONE-HALF TON STANDARD TRUCK

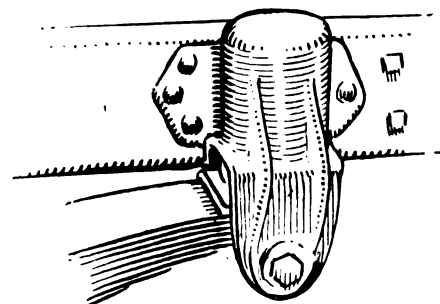
that the rebuilding consists mainly in the complete renewal of worn parts; as shown, the cars are not designed for heavy trucking or for service which in any way might seem unreasonable if applied to the standard pleasure cars, the bodies only being adapted for fairly light loads.

Probably revealing more points of individual detail than any other vehicle in the Garden, besides being one of the most solidly constructed machines built in this country, the Sampson five-ton truck retains a significant position in the field. Among its peculiarly meritorious features may be mentioned the use of combined chain housings and distance rods for the final drive, a differential lock, independent spring sus-

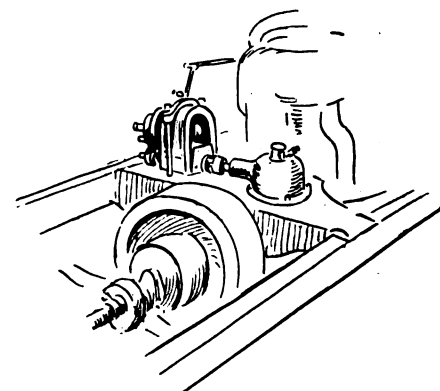
in four and three-ton capacities as well. To these cars have now been added two brand-new types, both of which are being shown for the first time. The one-ton model is broadly suggestive of the larger types in its general construction, yet possesses a number of points of differences. For example, it has a broad, flat extension at the rear of the crankcase, which is brought out on either side to form the rear supporting arms for the engine. Upon the left side of this extension the magneto is mounted, its drive being taken through a completely housed bevel gear connection with the cam shaft on the right side of the engine.

The multiple disk clutch, which is fully enclosed, is fitted with a clutch brake, the

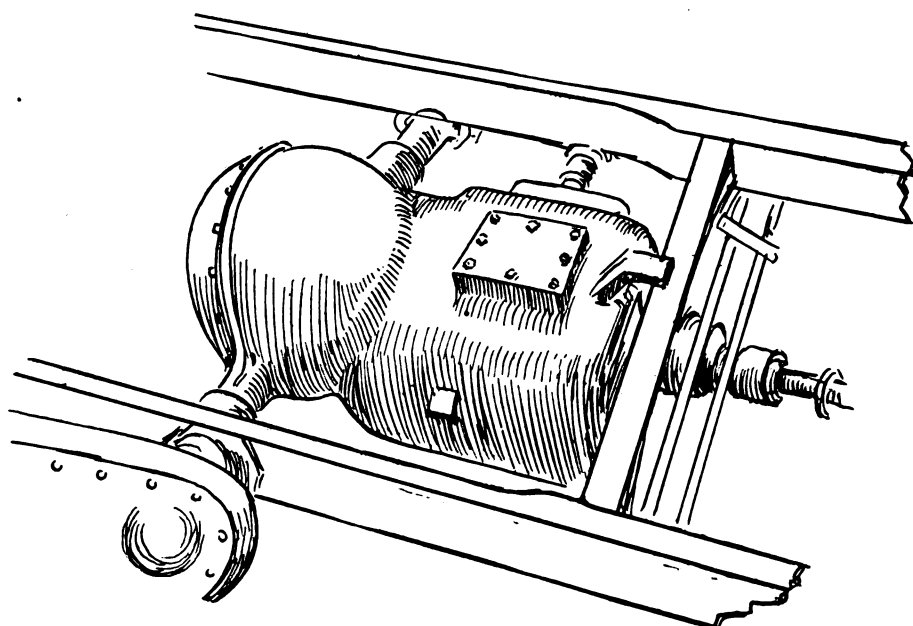
shown in the form of both open and closed delivery wagons, is of a totally different type. It is fitted with an opposed motor of $4\frac{3}{4}$ inches "square" dimension, and rated at 18 horsepower, selective gearset and shaft drive to the live rear axle. The motor and gearset are mounted on a special form of sub-frame, which is inclined to the rear to give a straight line driving effect, and which is so constructed as to give practically the effect of a unit mounting for the power plant. It has the dry plate type of clutch, left-hand drive, thermo-syphon cooling,



SAMPSON SPRING MOUNTING



SAMPSON'S NEW MAGNETO MOUNTING



GEARSET FOR ONE TON SAMPSON TRUCK

pension for the forward end of the engine supporting sub-frame, the use of a massive double-shoe brake between the gearset and the differential and countershaft unit, long semi-elliptical springs in the rear with gutta percha buffers supporting the rear ends, a semi-elliptic cross spring over the axle, which is designed to support excess loads, the use of an efficient form of automatic engine governor and spring mounting for the radiator.

The general specifications of the machine include the engine dimensions, which are $5 \times 5\frac{1}{2}$ inches, bore and stroke; the horsepower, which is 40; ignition, by magneto; lubrication, force feed to main bearings and through drilled crankshaft to rod ends; thermo-syphon cooling; clutch, cone with cork inserts; change gear, four-speed selective; wheelbase, 154 inches; and tires, 36×6 front and rear, the rear members being of the twin type.

The Sampson line now is complete, ranging from five down to 1,000-pound capacities. The standard type just mentioned is built

change gear mechanism is housed in a single casing with the differential unit, the side chains being tightly encased. The chain cases, however, do not serve the purpose of radius rods in this instance, the driving stresses being taken up by the springs. The service brakes are of the expanding type and are enclosed in drums, which are protected by the chain case; the rear section of the same housing also enclosing the drums in which the emergency brakes expand. The same driving position from a seat perched above the motor is employed as in the large trucks. In this type, however, the driver's seat is on the left, the brake and gear levers being placed under his left hand.

The 4×5 -inch motor is rated at 25 horsepower; the wheelbase is 110 inches, and $33 \times 3\frac{1}{2}$ -inch solid tires are used both front and rear. The spring suspension, unlike that of the larger models, embodies the three-quarter platform type of suspension in the rear.

In the new 1,000-pound model, which is

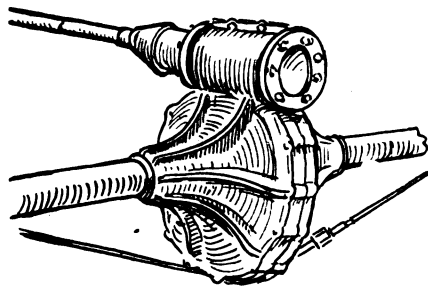
magneto ignition and other approved features, and is intended to fill the low-power and capacity range below the capacities of the other machines in the line.

Although worm drive, which now is looming large, is comparatively unknown in this country insofar as knowledge may be measured by the product of the average manufacturer, the H. H. Franklin Manufacturing Co. has employed the system continuously for something like four years and with striking success. The same construction still is employed without change on the one-ton light truck and delivery wagon, a sample of which is shown equipped with an open tray flare express body. The worm is placed above the wheel in this instance, and its end-thrust is absorbed by means of ball bearings. The rear axle is of the semi-floating pattern, and the chassis is carried on semi-elliptical springs, the front ends of which are anchored positively, instead of being shackled to the frame, and so are made to take up both the traction and tor-

sional stresses. The propeller shaft is fitted with two universal joints and is designed to work on a straight line under normal load conditions.

The power plant is of 18 horsepower rating, and is equipped with the original and exclusive Franklin system of air cooling. Each of the cylinders is surrounded by an individual chimney, or jacket, which forms a narrow annular passage down which air is drawn by the induction of a sirocco type of fan which forms an integral part of the flywheel. The upper and lower sections of the engine compartment under the driver's cab are separated by a diaphragm, the only openings in which are formed by the jackets. Thus the entire intake of the fan is made to pass over the cylinders in uniform amounts. The cylinder dimensions are $3\frac{3}{4} \times 4$ inches, bore and stroke, and the valves are placed side by side in the cylinder heads, as in the latest types of Franklin pleasure cars. The cylinders also are equipped with auxiliary exhaust valves, which take care of 60 per cent. of the waste gases.

The front axle is tubular, and is dropped

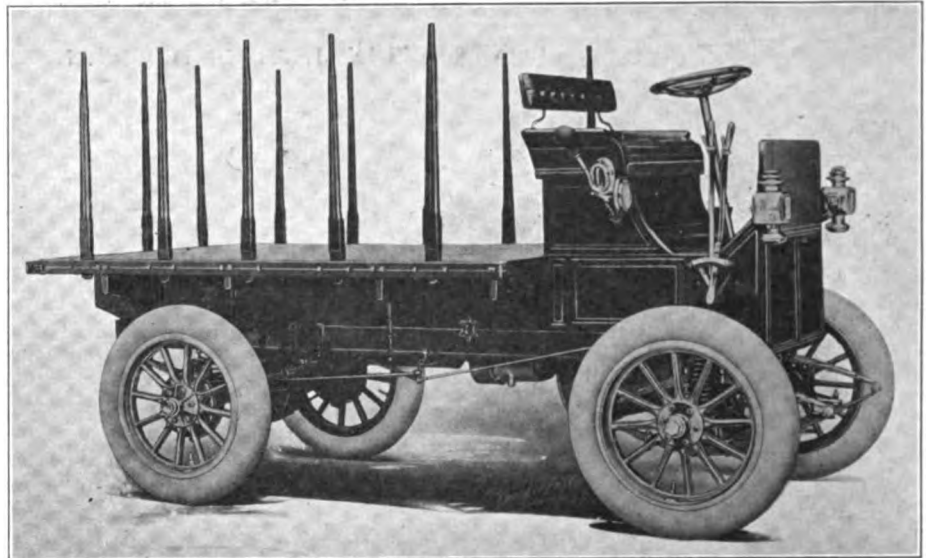


FRANKLIN WORM DRIVE

in the center, the clearance under the body thus obtained being utilized to full advantage by the front suspension, which is of the full elliptic type. At both front and rear the heavy shocks which come only under full-load conditions are absorbed by means of spiral springs which are arranged only as load bearers and not as the regular suspension of the chassis. The wheelbase is 94 inches in the type shown, but is variable according to the use for which the vehicle is intended.

Two other peculiarities of construction of this machine remain to be detailed, namely, the enormously large tires, $36 \times 5\frac{1}{2}$ inches, being standard equipment, and the laminated frame. Both features may be termed Franklin characteristics, as is also the employment of a progressive type of change gear, together with multiple disk clutch running in an oil bath.

The delivery wagon shown, which is of the engine-in-front type, has the same size and style of motor and change gear, but is equipped with bevel gearing for the final drive. The machine which stands in the booth is equipped with double reduction gearing on the rear axle, but it is explained that for all practical purposes this may be dispensed with, only the single reduction,

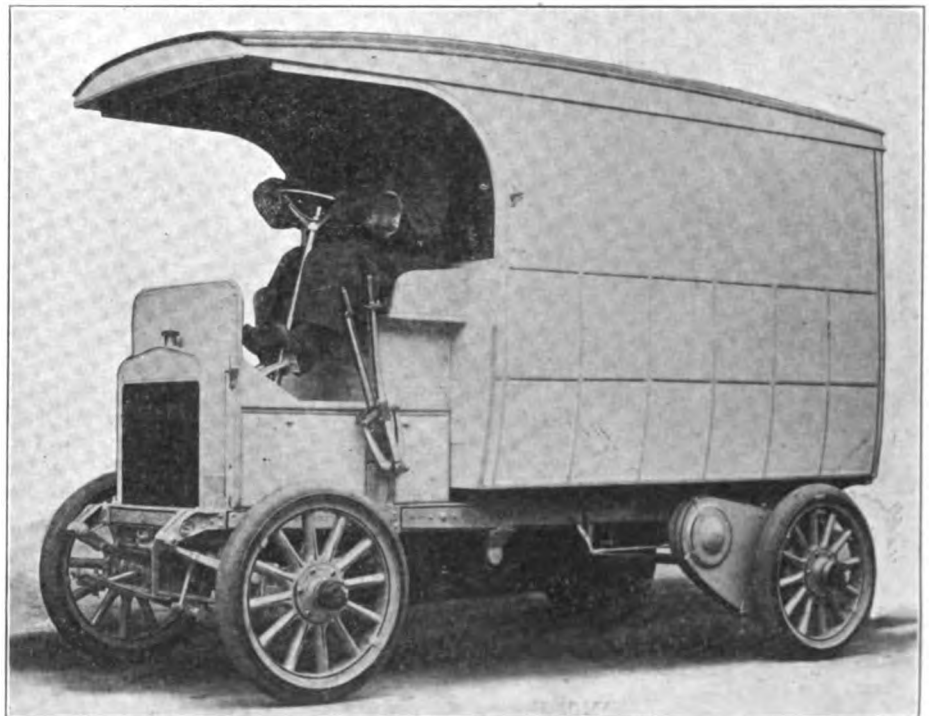


FRANKLIN ONE TON STAKE TRUCK

bevel drive, such as is used on the pleasure cars, being necessary. The car has full-elliptic springs all around, $36 \times 4\frac{1}{2}$ -inch tires and 120-inch wheelbase. Like the larger truck, it is fitted with Bosch magneto, having fixed spark adjustment and automatic engine oiling, the system comprising a force-feed oiler and feeds, which carry the lubricant through ducts in the crankshaft to the respective bearings. A neat form of taximeter cab also is shown, with "French type" hood and single seat in front, the arrangement being such as to permit a large trunk to be carried in front. This machine is equipped with 30×4 -inch tires.

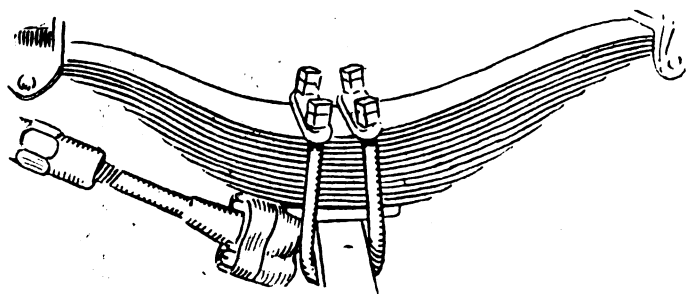
Price competition has not begun to figure largely in the commercial vehicle business

as yet, although one or two machines are on view which properly belong to the class in which a great deal is offered at what seems, by comparison, to be a very low price. An example in point is the Overland 40 horsepower, one-ton truck. Not only is the price exceedingly low, as prices in general go, but it is made to include a complete equipment consisting of top, dash and tail lamps, gas headlights, Prest-O-Lite, tank and horn, as well as magneto. The price for the car thus fully outfitted is only \$1,500. The engine is of the four cylinder vertical type, mounted under the cab, and driving to the live rear axle through a double jointed propeller shaft. The change gear, which is of the planetary type, is mounted integrally with the rear axle; it

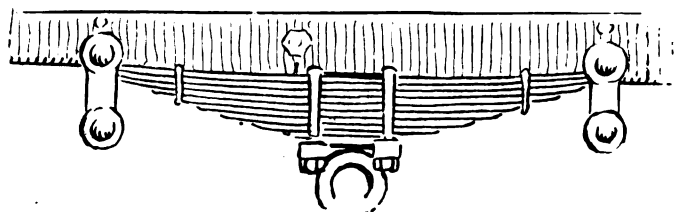


SAMPSON ONE TON PANEL BODY TRUCK

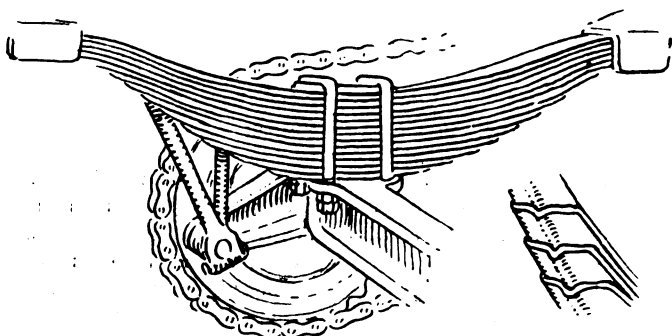
CONTRASTS IN METHODS OF SPRING SUSPENSION.



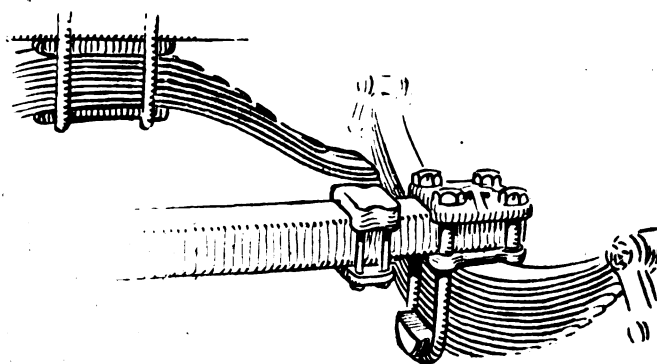
KNOX



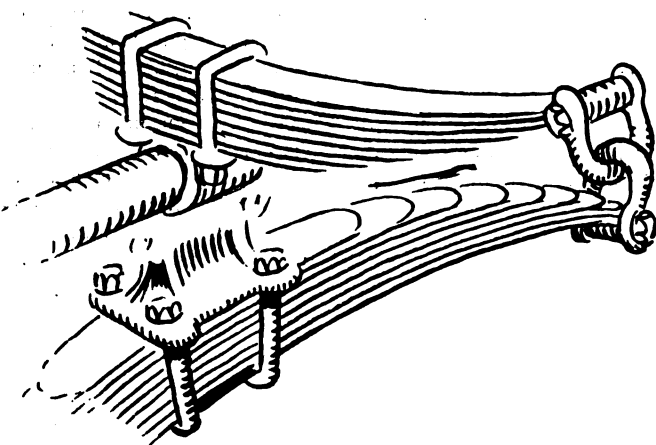
PIERCE-ARROW UNDER LOAD



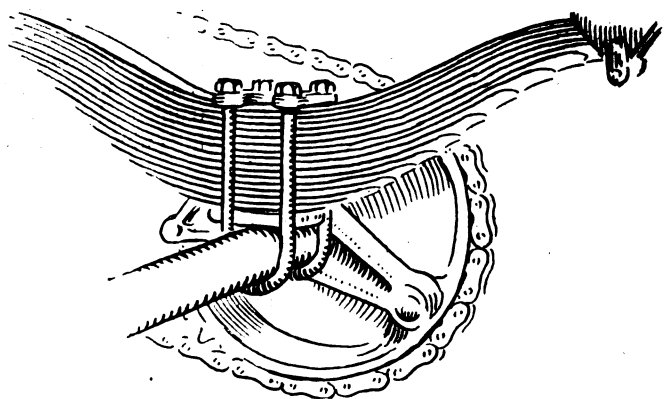
STEARNS



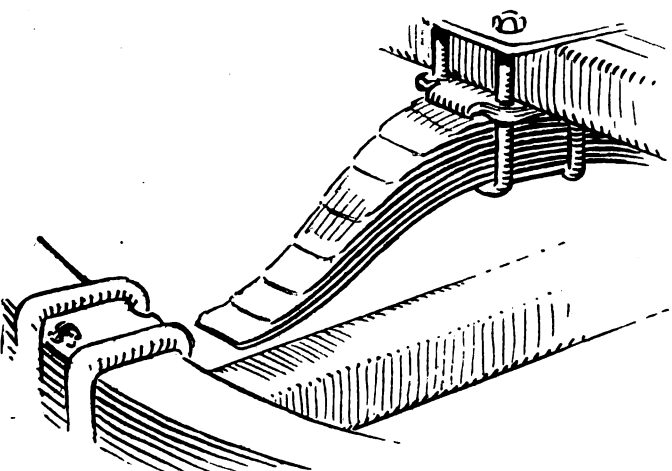
ALCO



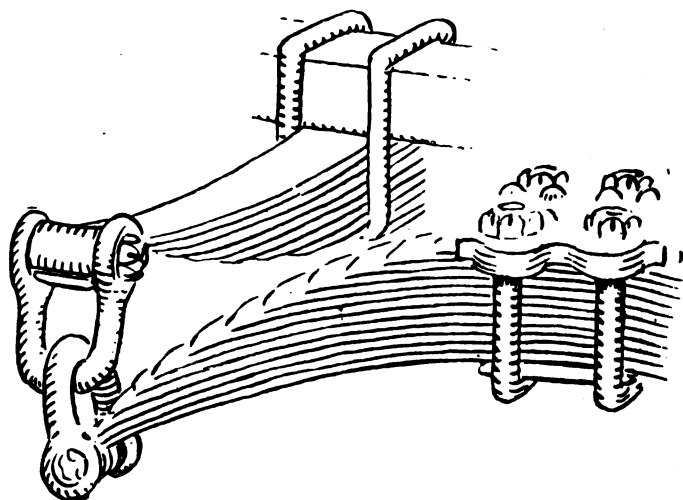
GARFORD



MORGAN



SAMPSON



WHITE

is of the same general type as that which is employed in several styles of Overland pleasure car, and, as in that service, is controlled by a simple system of pedal manipulation. The chassis is thoroughly trussed from end to end, and is built up by means of cross cleats to a sufficient height to allow a full overhauling, thus making the loading platform the full width of the vehicle from hub to hub. The entire equipment is 32 x 4¼-inch pneumatics, the wheelbase is 120 inches. The car may be geared for either high or

control. Final drive is by propeller shaft to a semi-floating rear axle. The standard tires are 33 x 4 inches, the standard wheelbase is 102 inches.

One of the neatest designs on view and one that has proved particularly satisfactory in heavy delivery service and transfer work is the Autocar, a design that has not been changed in any material respect during the several years that it has been on the market. Indeed, as reflecting something of

But one style of chassis is made, and it is shown in completely sectioned form, in standard equipment and with a variety of body adaptations illustrative of its wide application. In one of the closed delivery wagons an instructive adjunct to the display is carried on in the shape of a stereopticon display device, which projects pictures of Autocars in service on a screen, which closes the front of the vehicle.

By all odds the feature of the exhibit, however, and, indeed, one of the striking



OVERLAND 40 HORSEPOWER ONE TON TRUCK

low-speed work, according to the nature of the service contemplated.

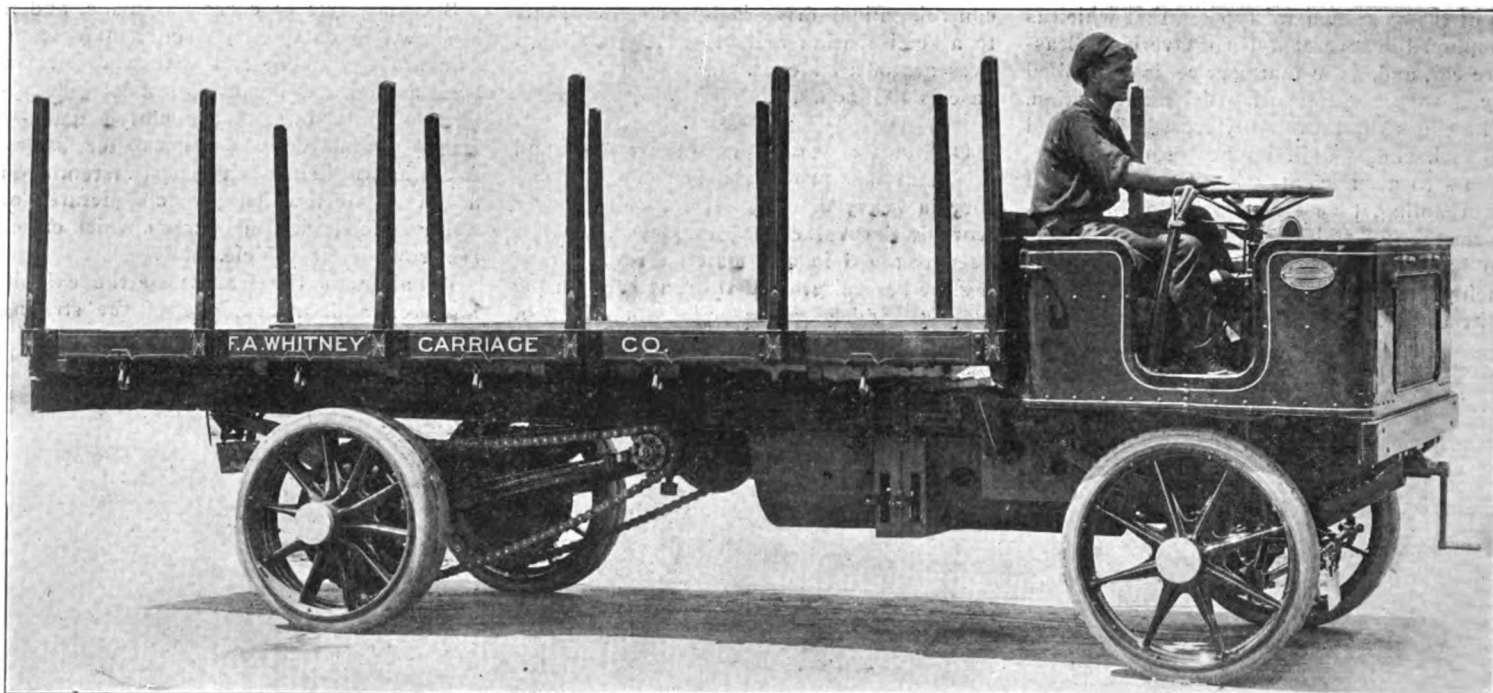
The other section of the Overland display is made up of two examples of the light delivery wagon, which is made to sell for \$1,000—also a special price considering the nature of the offering. The delivery chassis is more in accordance with touring car practice, though built to more solid standards. The four-cylinder motor is rated at 25 horsepower, and has cylinders measuring 3¾ x 4½ inches, bore and stroke. As in the larger car, dual ignition is standard equipment, the magneto being included in the regular outfit of the machine together with the lamps, horn and tools. The body designs are optional, the choice lying between the open tray type and the fully enclosed form of delivery wagon. With the smaller cars in question, however, gas headlights are rated extra equipment. The form of transmission employed is the familiar Overland type of planetary, with full pedal

its stability, it may be mentioned that practically the only changes in its construction which have been introduced in the new model are the adoption of three-quarter platform rear springs and a new style of universal joint in the propeller shaft.

Special features which have contributed to the success of the machine are the sound proportions of its 4¼ x 4½, two-cylinder opposed motor, three-plate clutch and double reduction on the rear axle. The latter, it may be explained, affords a greater ratio of reduction than could be secured conveniently with the ordinary form of bevel gearing, and involves a bevel gear reduction and also a spur gear reduction in addition from an idler member to the differential casing. Other original features on the machine are the progressive type of change gear, the employment of a dash pot on the clutch mechanism, and—which is particularly useful on a commercial car—a governor acting directly on the throttle.

features of the show is the Bellamore armored car, which is designed for the use of banks, paymasters and others having need to transport funds or make disbursements of money in the streets. The vehicle is fully enclosed and protected by electrified steel plate, which is so arranged that if an attempt is made to cut, bend or tear it, an alarm will be given by means of a large gong, which is mounted in a sounding-board case over the driver's head. As there is a pay window over a small covered vestibule in the rear, the paymaster can carry on his work without leaving his seat. A safe is provided within the vehicle, as well as a desk and arm chair. The only means of entrance to the interior is protected by combination and master-key locks.

While the Morgan truck hitherto has been one of the few staunch adherents of the planetary type of change-speed gear as ap-



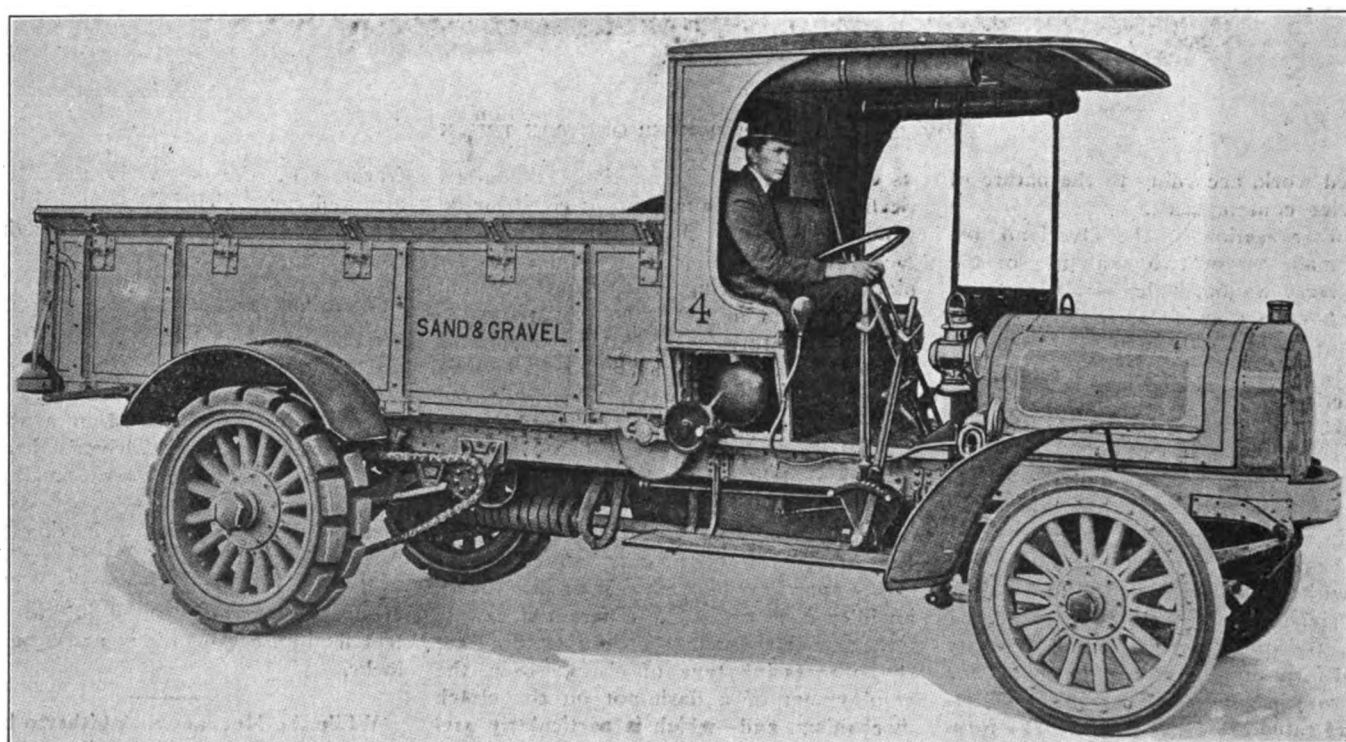
MORGAN FIVE TON 40 HORSEPOWER TRUCK WITH PLANETARY CHANGE GEAR

plied to heavy duty service, it now appears for the first time with a sliding gear equipment. This is purely an option, however, the complete machine on view, in fact, being equipped with the two-speed planetary unit which has been a standard feature up to this time. The latter is mounted just back of the motor, from which it is driven through a universal joint which is ideal in its simplicity, since it consists of nothing more nor less than a leather disk which receives the power-impulse at its periphery

and delivers it at its center. As the disk is capable of considerable deflection, it is obvious that it forms a perfectly flexible joint within the limited requirements intended, or, in other words, the limits of normal frame and power plant distortion. The change gear is actuated by a single lever which applies all speeds and drives to the countershaft unit, through a second leather joint. The latter unit embodies an original form of locking device for the differential mechanism. The jack shaft and

differential form a removable unit. Final drive is by side chains.

The new transmission is of the progressive order and very heavily built. It works in conjunction with a multiple disk clutch, which is fully housed, and a special form of flexible connection, which is similar to a universal joint in action, but limited in its range of movement as it is intended only to yield to slight distortions in the driving line. Its most striking feature is that the pivots are plain balls, of something over



MACK SEVEN TON TRUCK WITH NEW DUMPING BODY

an inch diameter, which fit into cup-shaped depressions in the inner member, and longitudinal grooves in the outer. The joint thus may be disassembled merely by drawing the two members apart.

The Morgan engine likewise is not without its points of originality. It is of particularly heavy construction, cast in block form, but with the second and third cylinders rather widely separated, so as to allow room for a liberal center crankshaft bearing. The valves are mounted in the cylinder heads, the latter being removable, and the push-rod mechanism is so worked out that the removal of the heads, which is necessary in order to gain access to the valves, may be very readily accomplished. The cylinder dimensions are 5 x 5 inches, and the output is rated at 40 horsepower. Lubrication is effected by an original development of the "pump-over" system, as it is sometimes called, and ignition is effected by Bosch magneto with battery held in reserve.

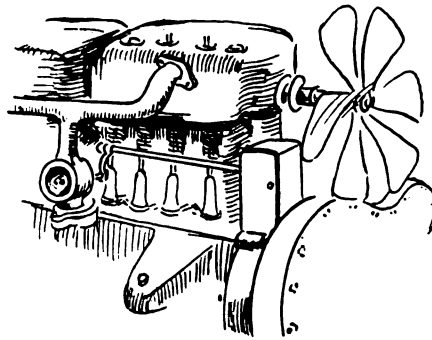
The truck itself is of strikingly heavy construction, the driver's seat being alongside the motor, so that the length of the vehicle is reduced to its minimum limit. The springs are semi-elliptical all around, the rear members being particularly solid. The wheel base is 141 inches, and the wheels are shod with 36 x 5-inch dual tires in the rear and 36 x 6 in front.

As a supplement to the exhibit is a small working model of a new loading system that likely has been developed, and which provides for the exchange of an empty body for a loaded one in two or three minutes by a method which requires no labor except that which can be performed by the driver of the truck. Stalls are provided, which are built into the loading platform and provided with guide rails to ensure the proper positioning of the machine. As the truck is backed into one of the stalls, bearing rails which form a part of the contrivance lift the body from the chassis and carry it into its loading position by the mere backward movement of the chassis. Upon releasing a coupling pin the chassis may be run out of the stall, leaving the body in position on the rails, and backed into the adjoining stall, where it runs in under a second body which already is loaded. Replacing the coupling pin is all that is necessary in getting the new body into place, as when the chassis again is run forward, the body is dragged forward and let down into position as it leaves the rails.

Mack trucks belong to the heavier type of commercial cars and have been more or less distinguished in the field for a number of years. They are built after established designs for the most part, although one new feature which has been introduced this year is noteworthy, this being an adaptation of the Mack type of sliding clutch change gear to the selective method of control, its actuation hitherto having been on the pro-

gressive order. The mechanism is very solidly constructed, and is so arranged that one of the two shifting arms constantly is locked in neutral position by means of a positive latch mechanism, which is so arranged that it is automatically released when the hand lever is brought over into position to actuate it.

The leading feature of the exhibit is the new one-ton model, which is equipped with a four-cylinder engine that follows Mack practice pretty closely, while having a few refinements, and which is rated at 32.4 horsepower, since its bore is $4\frac{1}{2}$ inches. The stroke, it may be added, is $5\frac{1}{2}$ inches. The cylinders are of L type with valves on the right and are cast in pairs. The new motor is equipped with a governor



MACK MOTOR GOVERNOR

which acts directly on the throttle. In common with the other members of the line it has magneto ignition and is lubricated by means of a pressure feed oiler mounted on the left side of the rear cylinder group. Instead of being belt driven, as in the older models, however, the oiler applied to the new style engine is driven by means of a vertical shaft.

Two rather striking vehicles grace the large display. One is a big tank wagon and the other is a dumping coal or gravel cart which is equipped with a hand tilting mechanism for discharging the load. The body is pivoted at the rear end of the chassis, and is tilted by means of a winch which operates to raise the forward end through a pair of chains running over sprockets mounted on the back of the driver's cab, and suitable linkage. The chassis to which this body is attached is fitted with unusually heavy springs, a supplementary load-bearing spring being placed over the rear axle in addition to the three-quarter elliptic members which form the main suspension.

A peculiarly effective method of flexible radiator mounting is employed in the construction of the Knox trucks, a five-ton chassis of which is shown. The cradle or seat upon which the cooler is carried consists of a continuous band of spring steel of a width equal to the thickness of the radiator, and extending from side to side of the chassis. At either end it is bent into scroll form, the lower and inner por-

tion of the involute being bolted to the frame members.

The motor employed in this particular model is of 40 horsepower rating, with its cylinders cast in pairs and of $5 \times 4\frac{3}{4}$ inches bore and stroke. In characteristic fashion, the cylinders are formed with independent heads, the inlet and exhaust valves being mounted in the head castings and operated by short overhead rocker arms and push rods. Transmission is by triple plate clutch with cork inserts and selective sliding gear to the jackshaft, the gearset being supported by the countershaft, supplemented by suitable lugs to the cross frame member, and by a special frame member which is dropped sufficiently to support the gear case from below. Heavy contracting shoe brakes are applied to the outer ends of the countershaft, while the emergency brakes are carried in the rear wheels in the conventional way. The latter are equalized by the traditional method of the wire cable connection.

For added stiffness the frame is trussed through the waist, while it is given proper suppleness through the provision of ball and socket joints in the radius rods. The wheelbase of the model on exhibition is 149 inches, and the block type of solid tire is standard equipment. The front tires are 36 x 5 and the rear ones 36 x 5 dual.

The one-ton Randolph exhibited is a rather neat version of the concealed engine type of delivery wagon or light truck, the "concealment" in this instance being rendered a simple matter by reason of the fact that the motor used is of the double-opposed pattern, and therefore exceedingly compact. Its cylinder dimensions, in fact, are $5\frac{1}{4}$ inches bore by $4\frac{3}{4}$ inches stroke, and it is connected through a reversed cone clutch and double jointed shaft with the selective sliding change gear. The latter, which is of the three-speed type, replaces the planetary system of gearing formerly employed. The countershaft, from which the final drive is taken by means of double side chains, is of particularly heavy construction, this being true of the frame brackets which support it and of the service brakes which are mounted at the extremities of the shaft.

The car now is equipped for the first time with Bosch magneto. Cooling is effected by the gravity system. Among other of its approved features may be mentioned a clutch brake which serves to simplify the operation of gear shifting. The front springs are of the semi-elliptical order, but the rear of the frame is hung on a pair of large full-elliptic members. The standard wheelbase is $96\frac{1}{2}$ inches, and the tires are 34 x 3 and 36 x $3\frac{1}{2}$ inches, front and rear.

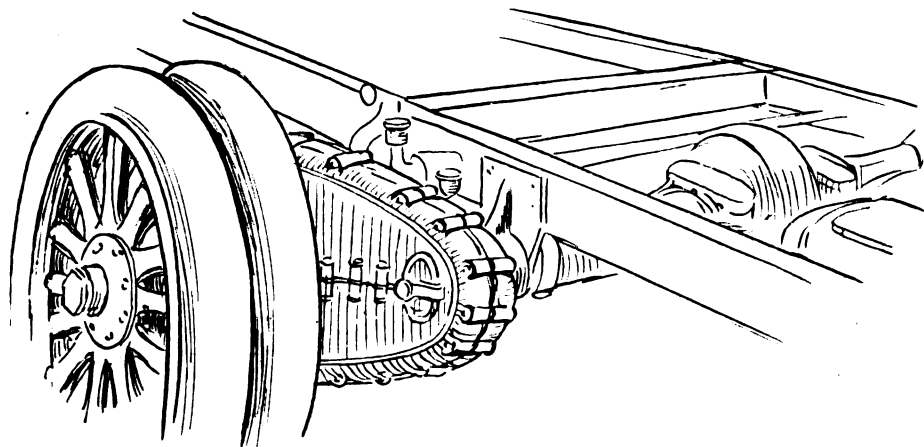
While in the past, Rapid commercial vehicles have been pretty well standardized as to style of construction, a diversion has been made at this time when a new style has been introduced in both one and two-ton

capacities. The new construction, which is much the same in both models, includes the use of a solid-looking block motor, which has fully housed valve stems, intake and exhaust manifolds and even flywheel, is ignited by magneto and lubricated by modern methods. The change gear system is of the four-speed selective pattern, and embodies a neat pedal-controlled, differential lock. For the purpose of this device the sleeve of the

of the locomotive builder is suggested as soon as the details of construction of that machine are studied at all closely. This notion is called to mind first by the shape and size of the rear spring members. They are of semi-elliptical pattern, hung under the axle, instead of being perched on it, as more frequently is the case, and they are supplemented by a very heavy form of bearing spring which is placed above the rear

equipped with magneto ignition, combined force feed and splash lubrication, and has a compression release for easy cranking located on the left side of the cab. The driver's seat is perched high above the motor, high enough, in fact, for the footboard to clear the tops of the cylinders. In consequence, the pedals are provided with unusually long leverages, so that the working of the vehicle is exceptionally light. The clutch is of the multiple disk type, a neat little detail of its mounting being the placing of the grease cup that is used to lubricate the throw-out yoke outside the body, connection with the greaseway being completed by a length of flexible tubing. The change gear is of the three-speed selective order. The wheelbase is standard at 110 inches, and the tires are 36 x 5 in front and 36 x 4 dual in the rear.

Because the three-cylinder, two-cycle engine heretofore used has been replaced by a four-cylinder, four-cycle motor of Reliance manufacture, the Reliance trucks that are in evidence may be said to differ from their predecessors. The new engine is of the familiar "T" head construction with cylinders, $4\frac{3}{4} \times 5\frac{1}{2}$ inches, cast in pairs and water cooled, circulation being accomplished by means of a centrifugal pump. Thirty-eight horsepower is developed by the motor. Another new thing in the Reliance exhibit is a five-ton truck with dumping body, the dumping apparatus be-



RAPID COMBINATION CHAIN CASE AND RADIUS ROD

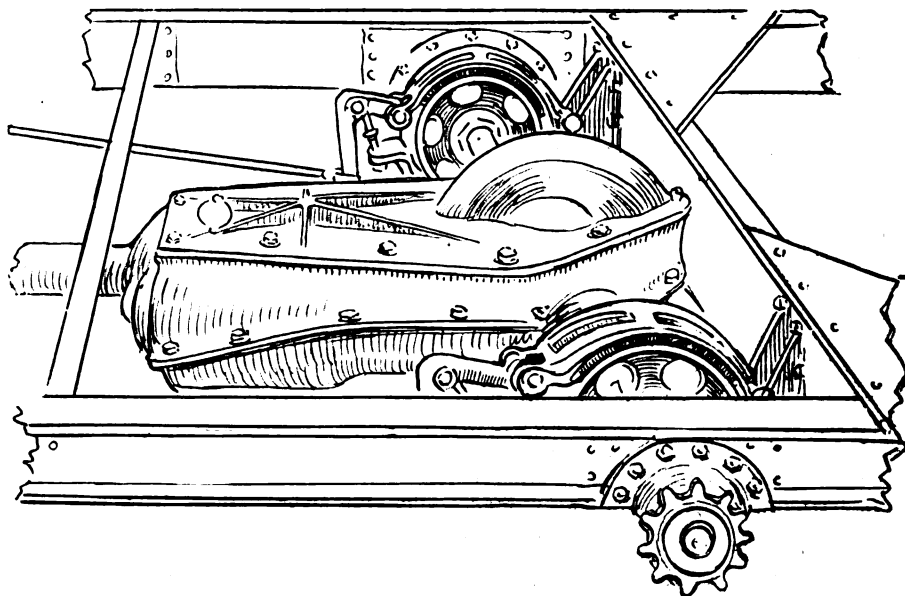
floating differential member is brought outside the main housing to the right and fashioned with crab clutch jaws. A corresponding clutch member, which is splined onto the right driving shaft of the countershaft group, is brought into engagement with the floating member in this way, whenever the proper pedal is depressed. The object and manner of application of the device has been made plain in connection with the mention of similar devices on other cars that are on view at the show.

Final drive is by double side chains, but the chains are encased in stout pressed steel housings, which also serve the purpose of distance or radius rods, so that their considerable strength is fully in demand. The driver's position is on the left, both in the two-ton vehicle, which is of the true truck type with the seat above the engine, and on the one-ton type, in which the motor is carried under a hood in front of the seat. The control levers in both machines are placed in the center of the footboard. One rather neat detail of construction that ought not to be overlooked in passing is the mounting of the radiators, which embodies the carrying of the coolers in vertical guides formed at the forward end of the frame. As the weight of the cooler is entirely taken up by rather supple springs, that important piece of apparatus is thoroughly protected against the effects of jolts and jars.

The Rapid three-ton type of truck also is on view in slightly altered form from last year. The changes, however, are said to effect only minor details of construction.

That the builder of the Alco truck has called into account not a little of the lore

of the locomotive builder is suggested as soon as the details of construction of that machine are studied at all closely. This notion is called to mind first by the shape and size of the rear spring members. They are of semi-elliptical pattern, hung under the axle, instead of being perched on it, as more frequently is the case, and they are supplemented by a very heavy form of bearing spring which is placed above the rear



ALCO TRANSMISSION AND LOCATION OF SERVICE BRAKES

being nearly two feet in diameter. The service braking is done on the countershaft, the double shoe brake being applied inside the frame, instead of at the extremities of the countershaft, as frequently is done. The frame is heavily gusseted and of very deep channel section.

The motor is of the T-head type, with cylinders cast in pairs, and measures approximately 5 15-16 x $4\frac{3}{4}$ inches, bore and stroke, its power rating being 24.8. It is

ing somewhat unusual. When in loading position the channels on the bottom of the body rest upon a series of small steel rollers. To dump the load a winch is used which draws the body back by means of a chain, until a bracket on either side catches respective pins forming a pivot. The load is then balanced on its center and is easily overturned. The chassis of a $3\frac{1}{2}$ -ton truck which is displayed disclosed the mechanical features, which, except in weight of con-



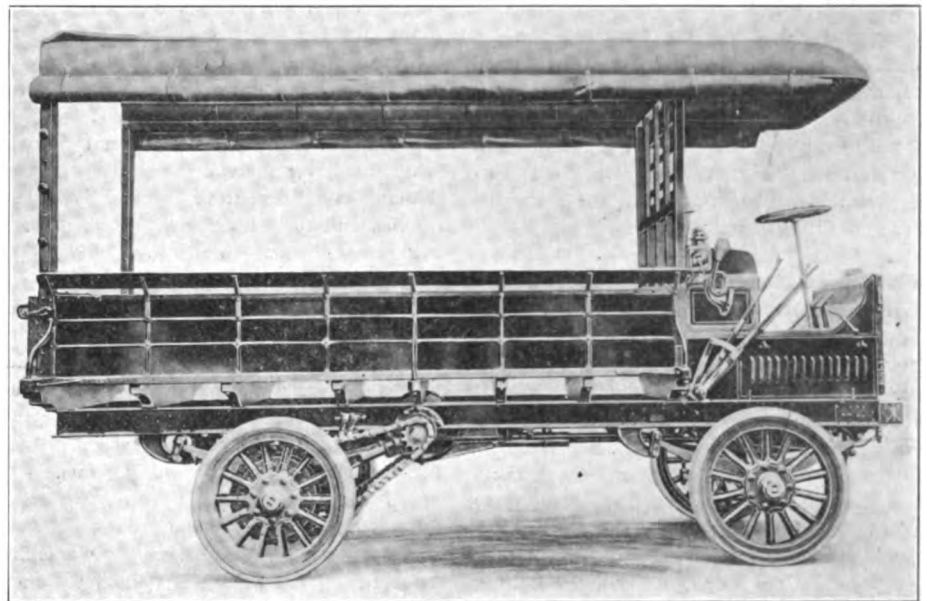
RELIANCE FIVE TON TRUCK

struction, are identical in all models; the features include a Hele-Shaw clutch and a three-speed progressive transmission. A shaft drives the countershaft and two roller chains transmit the power to the rear wheels. All springs are semi-elliptic, and the wheelbase is 145 inches on all chassis except the dumping body, which has 130-inch wheelbase.

The exhibit of the Reo Motor Truck Co. comprises two Reo wagons which were brought out this year for the first time. Their respective capacities are 500 and 1,500 pounds, and both as shown have open delivery bodies driven from the left side with right hand control. The motive power is furnished by a two-cylinder opposed motor, with cylinders $4\frac{3}{4} \times 6$ inches, cooled by the thermo-syphon system and identical with that which has been used for several years in the Reo pleasure cars. The smaller wagon is driven by a single chain to the rear axle, has three-quarter and full elliptic springs and either solid tires, 30×3 inches, or pneumatic, 28×3 inches. The 1,500 pound car is double chain driven, has semi and full elliptic springs, and tires $36 \times 3 \times 3\frac{1}{2}$ inches.

Among the several different types of rapid loading systems exhibited in connection

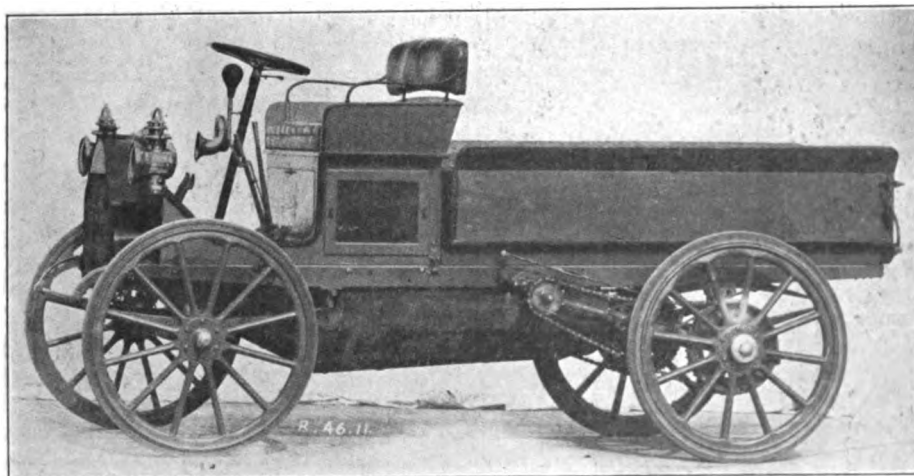
with the vehicle displays is one which is staged at the Packard booth. The principle involved is that of removing the entire



ALCO THREE TON TRUCK

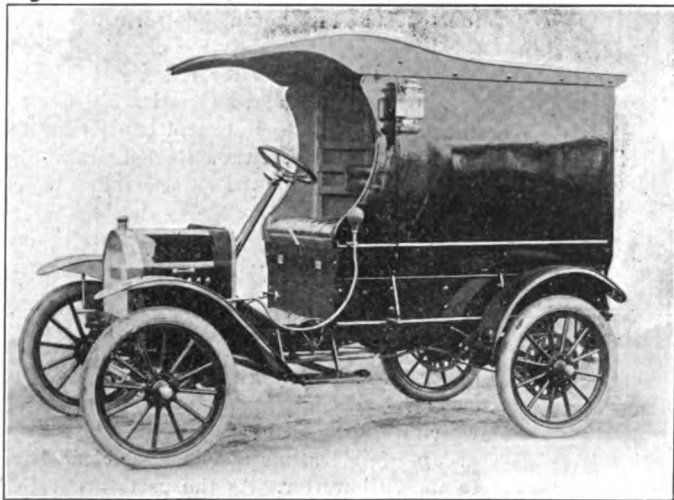
body from the chassis by means of a track on the latter and a half dozen rollers on the former, a special form of hand-drawn transfer truck being used to lift the body from

ly service of the manufacturer, it is thought that the mechanism is pretty well protected against abuse.

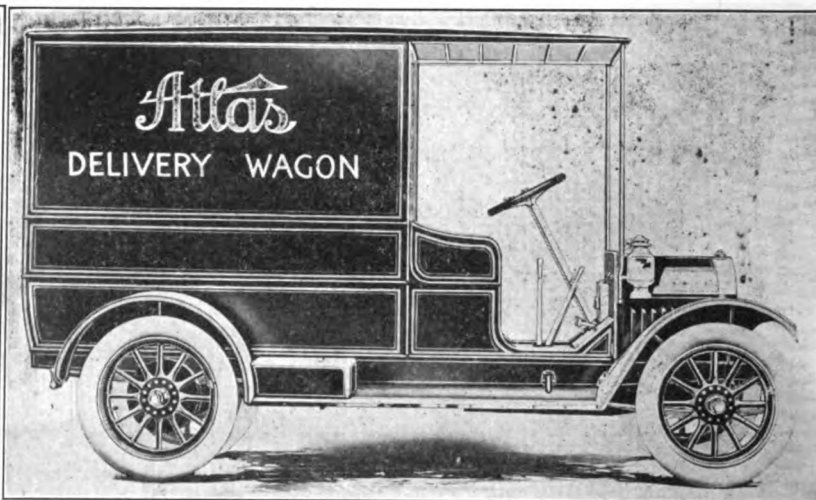


REO 1,500 POUND OPEN EXPRESS WAGON

Of the many light deliveries exhibited, the only one which has for its motive power a two-cycle motor is the Atlas 20 horse-power panel top wagon. The chassis is built along the line of the Atlas pleasure car chassis, and has the same motor, with cylinders $4\frac{1}{2} \times 4\frac{1}{2}$ inches, cast in pairs. All the new features are embodied in it, such as unit power plant with three point suspension, roller bearings substituted for plain, and lubrication accomplished by mixing oil with the gasoline. A dry plate clutch is used and the transmission is the three speed selective type. Semi-elliptic springs suspend the body both in the front and rear. The tires are $32 \times 4\frac{1}{2}$ inches Q. D., and the wheelbase is 102 inches. The Atlas is also shown in the taxicab form, the chassis details being alike except that the



BRUSH SINGLE CYLINDER DELIVERY WAGON



ATLAS 1,500 POUND PANEL TOP DELIVERY WAGON

frame is dropped, three-quarter elliptic springs are used in the rear, and the tires are 34 x 4 inches Q. D. Delivery wagon bodies have a capacity of from 500 to 1,500 pounds, the one shown having a carrying space 6 x 4 x 5 feet. The taxicab is large and roomy and is very finely finished, both inside and out. The steering wheel on both these models is on the left, with the control levers in the center.

While three standard delivery wagons are shown at the Brush exhibit, the most striking one is a standard runabout finished in yellow, on the rear of which a box has been mounted, thus serving to show the general utility purpose to which the little car may be put. Thus equipped, it is designed for the delivery of butter, as its oleomargarine hue suggests; it is alliteratively and aptly referred to as a "better car for butter delivery." As is the case with all Brushes, it is equipped with a single cylinder motor of 10 horsepower, water cooled by the thermo-syphon system. The drive is by single chain to countershaft and by double

chain to rear wheels. The axles and frame are of wood, and the springs are spiral. The open box and panel top deliveries shown differ in no mechanical respect. The wheelbase on these heavier wagons, however, is 88 inches instead of 80 inches. The tires are 30 x 3 inches and the tread 56 inches. The carrying space in these deliveries, which have left-hand drive, is 51 x 37 1/4 inches, and the capacity is 600 pounds. The car itself, with panel top, weighs 1,450 pounds.

Among the several entirely new cars which are making their first appearance at the show may be mentioned the Peerless, which is of three-ton capacity and built to generally standard specifications. The T-head motor, which is cast in pairs, is rated at 32.4 horsepower. It drives to the rear wheels through a cone clutch with cork inserts, selective change gear with mechanical interlocker between the sliding sets and double side chains. One noticeable feature of its spring suspension is the rather unusual application of coil springs to receive the ex-

tra stresses of heavy loads. The main frame members are semi-elliptical in form, and have short superior leaves to dampen any tendency to plunging action in the principal members.

The tire specifications call for 36 x 4-inch solid equipment in front and 34 x 4 dual in the rear. The wheelbase is 131 inches.

Two open express wagons are shown by the McIntyre company, one of one ton and the other of 600 pounds capacity. The larger vehicle is equipped with a 24 horsepower motor of two opposed cylinders, 5 1/4 x 4 3/4 inches, set crosswise, and cooled by the thermo-syphon system. It is suspended on a sub-frame in front, and underneath a hood. A multiple disk clutch is used, and the planetary transmission allows two speeds forward. The drive is by shaft to countershaft and by double chains to the rear wheels. Full elliptic springs are placed all around. The 600 delivery, which sells for \$465, has a 14 horsepower opposed motor with cylinders 4 1/8 x 3 3/4 inches, air-cooled, and suspended under the body. The



AUTOCAR 18 HORSEPOWER GASOLINE DELIVERY WAGON

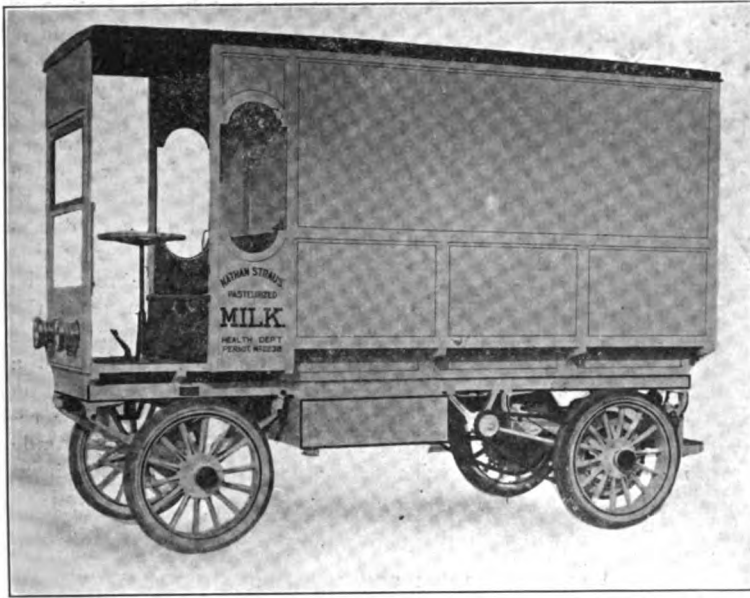


WARD ELECTRIC 800 POUND DELIVERY WAGON

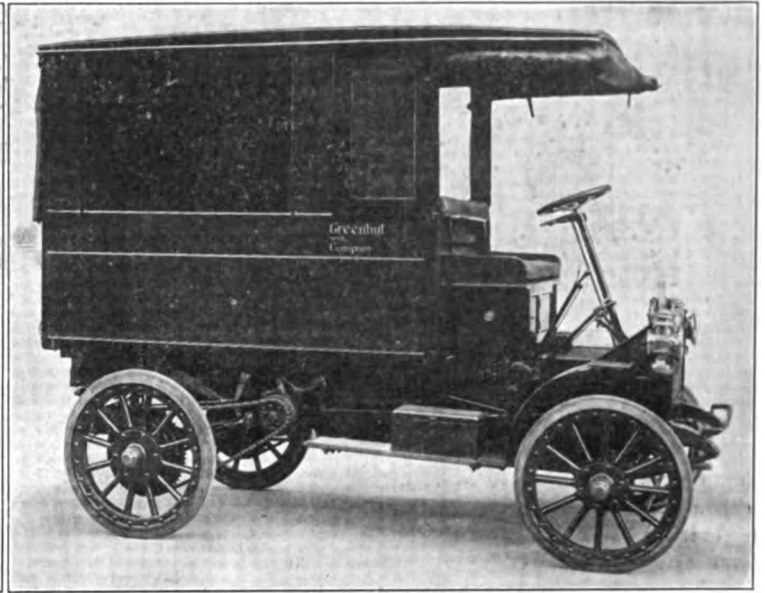
same type of transmission and clutch are used as that in the one ton express, but the drive is by single chain to jackshaft instead

of by shaft. Full elliptic springs hold up the rear of the frame in the conventional way, i. e., one on each side, but in the front

a single full elliptic spring placed cross-wise of the chassis serves the purpose of the two more generally used.



GENERAL VEHICLE TWO TON ELECTRIC TRUCK



RANDOLPH ONE TON GASOLENE DELIVERY WAGON

Evidence of Ingenuity Found in Electric Vehicles

Of the electric commercial vehicles there are six manufacturers who are showing either trucks or delivery wagons—Anderson Electric Car Co., General Vehicle Co., Lansden Co., Studebaker Automobile Co., Waverley Co. and Ward Motor Vehicle Co. The electric commercial had a long start on the gasolene truck, in both small and large sizes, and as a result, after several years, has reached a state of comparative perfection that leaves small room for marked change or betterment. The chief point of difference in the electrics of today and of yesterday is in respect to batteries, most of which now afford greater radius of operation. The new Edison nickel-iron storage battery has been adopted by several of the makers in their product.

Standardization is far more apparent in the electrics than in the gasolene vehicles. Features which are common to nearly all the products displayed are suspension of the motor under the frame, with the batteries immediately forward of the motor; single chain drive to jackshaft and double chain from jackshaft to rear axle; left-hand drive; the use of semi-elliptic springs on the heavier chassis, and a continuous torque controller.

The manner in which they vary in construction is chiefly in respect to wheelbase, sizes of wheels and styles of tires and in brakes.

Easily the greatest novelty and most radical development in evidence is the Lansden new regenerating controller. The wiring system is so arranged that the motor acts as a dynamo to charge the batteries when the car is coasting down hills; it also is

used as a brake; other brakes being rendered unnecessary; they therefore have been eliminated. Another distinct novelty is the spring suspension employed on the Lansden five-ton truck. There are three coil springs at each of the four points of support. Cup-shaped castings on the under side of the frame and on the front and rear axles retain these coils and hold them securely in shape. Double leaf springs fastened to the coil brackets run back from the front coils and ahead from the rear coils to independent brackets on the body. These serve to damp the oscillations of the coil springs. All the other models are equipped with semi-elliptic springs all around. The motor is hung underneath the frame, and power is transmitted by a Renold chain to the jackshaft, located ahead of the motor, thence by double chains to the rear axle. Although it is not included in the Lansden exhibit, a little three-wheeled truck, called an industrial truck, and popularly dubbed "Kelly," because of its general utility, has been much in evidence for utility purposes in shifting loads and trucks about the building. It has a short wheelbase and is built to move quantities of goods short distances at low speeds and low cost, and chiefly for indoor service.

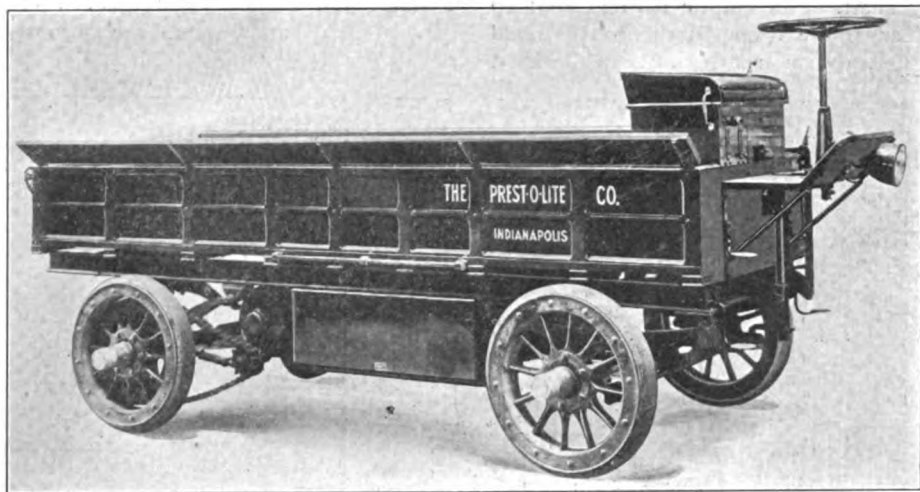
Studebaker commercial cars, of which a delivery wagon and a five-ton truck—loaded with empty kegs—are shown, differ from most of those exhibited, in that two motors are employed, of the Westinghouse railway type, and that the differential is eliminated by their use. The series-parallel continuous torque controller allows four speeds, both forward and reverse. The motor mechanism

is swiveled from a horizontal bar parallel to the rear axle. The reduction from armature to countershaft is an enclosed spur gear integral with the motor. The drive to the rear axle is by double roller chains.

Two sizes of trucks are shown by the Anderson company, manufacturers of Detroit electrics, with respective capacities of 1,000-1,200 and 2,000-2,500 pounds. The motors and drive are similar to those in general use, and Edison batteries furnish the current. The panel delivery shown has a wheelbase of 86 inches and a 58-inch tread; wheels with solid tires, 32 x 3 and 34 x 3½ inches, and semi-elliptic springs.

To its varied line, the General Vehicle Co. has added a 700 pound delivery, which meets the demand for a light package delivery of this type, and which is staged for the first time. The motor is of special design, entirely enclosed, and drive is by Morse silent chain to jackshaft, thence by double roller chains to the rear wheels. Both brakes are internal expanding, the springs are all semi-elliptic, and 32 x 2½ inch solid tires are used all around. Although this small delivery is the only new model, there also is shown a large five ton truck with a load of beer kegs, a one ton truck, a 1,000 pound delivery and a "Trenton" tower wagon. None of the chassis vary in construction, except in regard to weight, all having but one motor, double chain drive and all other details in common.

The Waverley delivery wagons are shown in two sizes, a light express and a 1,000-

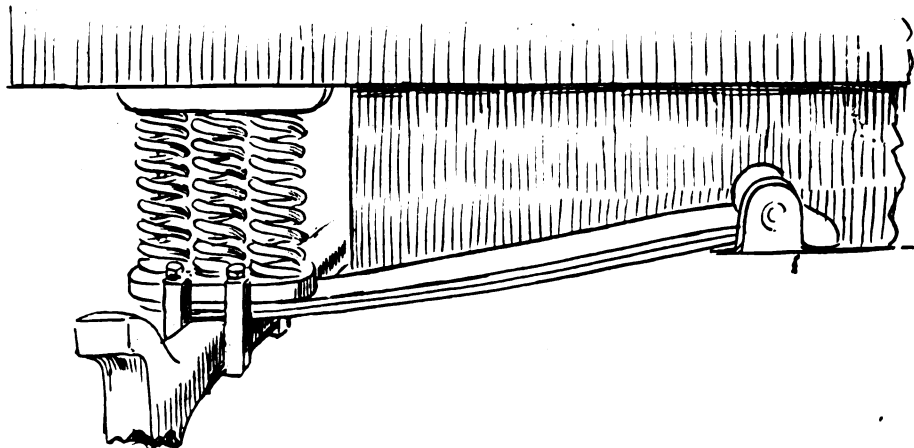


WAVERLEY ELECTRIC THREE TON TRUCK

pound wagon. To these light wagons has been applied the shaft drive which is used in their pleasure cars, making it different from any other electric commercial car exhibited. The wheels are 32 inches, and the wheel base 87 inches. Either solid or pneumatic tires are furnished.

With two electric deliveries, one a panel body and the other an open delivery with top, the Ward Motor Vehicle Co., formerly known as the Pittsburgh Motor Vehicle Co., is showing both single and two-motor driven cars. The smaller of the two has a capacity of 800 pounds, and drives from its single motor through silent chain from armature to sprocket on the live rear axle, instead of employing a jackshaft and double chain, which type is more in evidence at this show. The other, a 2,000-pound delivery, employs silent chains from the armatures of its two motors to countershafts,

thence the power is transmitted by roller



LANDSEN FIVE TON TRUCK SPRING SUSPENSION

chains to the rear wheels. The springs are semi-elliptic and platform on the smaller,

and platform front and rear on the larger delivery. The rear platform springs are elevated in front, but settle on a plane with the rear end when the body is loaded.

ELECTRIC PLEASURE CARS.

Distinguishable by striking body design and exclusive mechanical features and by its long, low and easy riding appearance, the Hupp-Yeats inside driven coupe, a newcomer in the field of electrics, is conspicuous. Mechanically this car differs from all other electrics in that its motor is a unit in construction with the rear axle. There are no chains or reduction gears, the power being transmitted from the armature shaft directly to the rear axle through a single set of bevel gears. The pinion is on the end of the armature shaft, and the reduction of the gear is 10 to 1. The Exide batteries are carried over the low front



LANDSEN ELECTRIC FIVE TON TRUCK

axle and underneath the sloping hood. The body is carried much lower than the ordinary electric body, the running boards being about on a level with the floor of the car and about as high as the average curb. The wheels are 32 inches, equipped with $3\frac{1}{2}$ inch tires, and the springs are semi-elliptic in front and three-quarter elliptic in the rear.

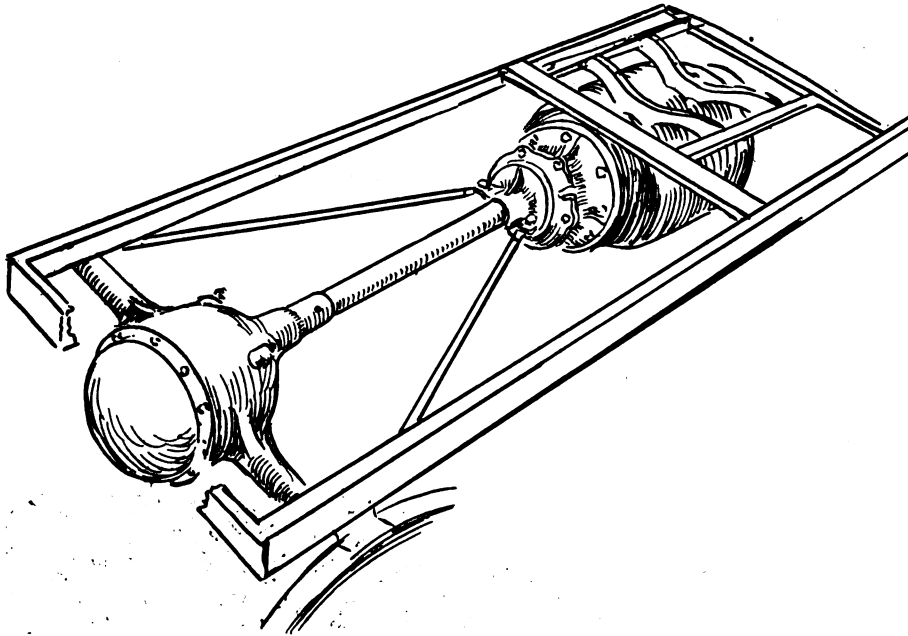
One of the few electric vehicle makers who build their own motors is the Waverley Co. Another feature exclusive to the Waverley product is the method of transmitting power to the rear axle by a shaft drive, with herring-bone gears connecting parallel shafts. The cardan shaft has two universal joints, and the rear axle is of the full floating type. An interlocking device makes it impossible to change the direction of speed with the power on, or to start on any speed but the low, thereby preventing any jerk when the car starts. Two independent sets of brakes are used, both of the contracting type. They are actuated by foot pedals, one braking the transmission and the other each of the rear wheels. The leading car for 1911 is the new four passenger brougham, which is the only pleasure car exhibited and which in many

respects resembles the model 75-C of last year. The body is a single piece but three inches wider, the panels in the front are swelled and the interior furnishings are more luxurious.

Of the new features which characterize the Detroit electrics for 1911, the shaft

brougham, brougham, coupe and three victorias, ranging respectively in price from \$3,400 to \$2,600. With the shaft drive, of course, all chain or gear reductions from motor to driving shaft have been eliminated, the power being transmitted straight from the armature shaft to the adjustable bevel gear on the rear axle. The Detroit ex-

with hood in front, shown for the first time, and which is novel in that it is the first electric to employ an underslung frame, 36-inch wheels and 96-inch wheelbase. The drive is the tandem enclosed, silent chain type, all moving parts being enclosed in aluminum housings. The wheelbase of all the other models has been increased to 85 inches, and the tread to 56 inches. All models are driven from the left side.



DETROIT ELECTRIC "CHAINLESS" DIRECT SHAFT DRIVE

drive is the most notable. It is, however, applied only to six models, the extension

habit also includes a new model, a torpedo roadster of the so-called gasolene type

Two landaulets in two forms are shown by the Studebaker Automobile Co., one having an extension front and the other with a top which folds completely down, combining the features of a coupe and a phaeton. In this car, which is model 17, the step has been brought very close to the ground, making it very easy to enter or leave. In the chassis, the Exide batteries are placed part in the front and part in the rear, distributing the weight evenly. In addition to foot lever control brakes on the rear axle, a prompt and effective mechanical brake is actuated from the controller handle. The use of the shunt speed as a purely mechanical provision is assisted by the fact that the operator must hold the controller contact in place to keep the shunt speed in operation. The controller jumps back to the highest normal speed when it is released. This distinguishes the use of shunt speed from the highest economical running speed and tends to prevent abuse. The springs are semi and full elliptic, the wheels are $30 \times 3\frac{1}{2}$ inches, and the wheelbase 71 inches.

Public Service Vehicles that are Displayed in the Garden

With motor propelled pleasure cars and reliable commercial vehicles in daily operation in increasing numbers, the possibilities and serious development of automobiles for public service work has reached that stage not generally appreciated by the public. The ambulance, the patrol wagon and the fire wagon all are in this category, and specimens of each are included in the Garden show.

In the realm of fire-fighting apparatus, small chemical and hose wagons came first; larger wagons with more complete apparatus were followed by pumping engines driven by gasolene motors and with provision for the carrying of firemen as well as the complement of chemical tanks and hose.

Pioneers in the field of automobile fire-fighting apparatus, the Knox Automobile Co., Springfield, Mass., exhibits the only real fire engine on exhibition, and incidentally the only motor vehicle in this class in which a double reciprocating plunger pump is used and driven by the same engine which furnishes the power for the propulsion of the wagon. The regular Knox six-cylinder, 60 horsepower is used and is mounted on a special chassis on which the

tires are sectional solid rubber and measure 40×5 in the front and dual 40×4 in the rear. Exceptionally heavy three-speed selectively operated transmission conveys the power to the rear wheels through the medium of side chains. In addition to the motor-driven pump, 1,000 feet of fire hose, two ladders, two pony extinguishers, two lanterns, a crowbar and other necessary apparatus are carried. Ample room for a crew of 10 men is provided. The pump is a double-acting, two-cylinder type, each cylinder having a bore of $4\frac{1}{2}$ inches and a stroke of 8 inches. By the shift of a lever, the pump is connected with and driven by the motor, the power being applied through a large Henley spiral and a Renold silent chain. By this means the pump can be engaged or released at will. Each cylinder is provided with a safety valve to prevent damage to either pump or hose when the water is shut off at the nozzle. The oiling system is directly connected to the force-feed oiler on the motor. The machine has a wheelbase of two inches less than 14 feet, about a third larger than the largest touring car, and weighs five tons. The pump is carried on plain bearings, but Hess-Bright ball bearings are used throughout

the rest of the machine. The pump is designed to deliver 600 gallons of water a minute at 300 revolutions, but in tests is said to have exceeded this and shown a very high hydraulic horsepower efficiency. The other Knox public service vehicle displayed is a police patrol wagon. The chassis is one which has been built especially for use in ambulances and police patrols, and is fitted with the regular type four-cylinder, 40 horsepower Knox motor. The wheelbase is $134\frac{1}{2}$ inches, and the tires are $38 \times 5\frac{1}{2}$ pneumatic, the same size being used front and rear. A standard patrol wagon body is used and differs but slightly in general design from the usual type of horse-drawn vehicle which this car is designed to replace.

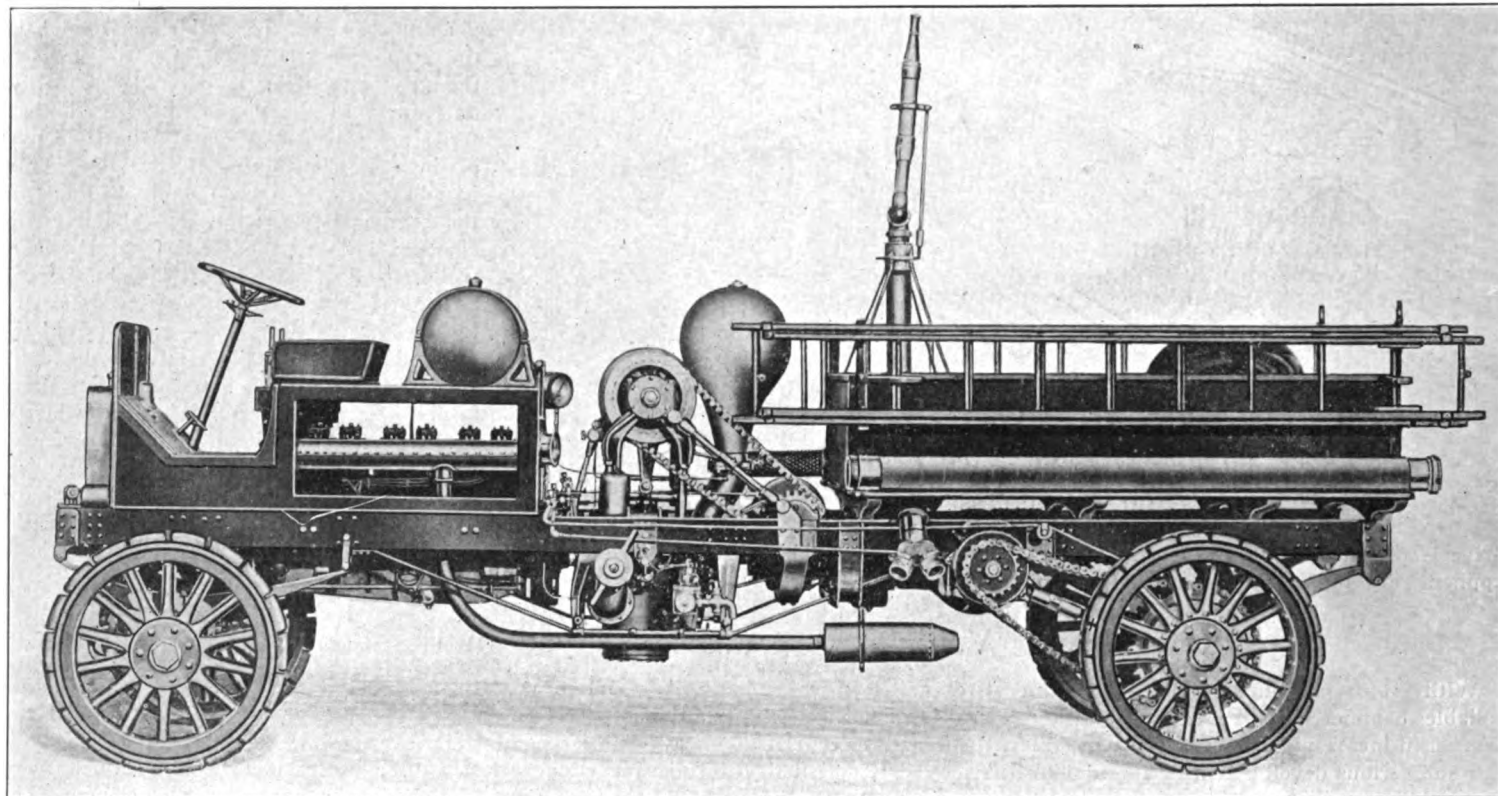
The Autocar Co., of Ardmore, Pa., shows not a fire engine, but a chemical fire wagon which is unique in that it is the smallest and most complete for its size of those vehicles which come under this category and are shown in the Garden. The wagon is built on the regular Autocar truck chassis, the only change in the construction of which is a reinforcement of the frame. Motor, transmission and tire equipment remain the same, though the body, of course,

is entirely different from the other delivery wagons which this company shows. Fire engines usually are red, and this one does not violate the rule, although the red is relieved by gold striping and other ornamental work. No provision is made for the carrying of passengers other than the driver and one other, the whole wagon being given over to chemical apparatus and hose. Two 35-gallon tanks, three 3-gallon hand extinguishers, 200 feet of hose and miscellaneous lanterns, axes, etc., are included in the equipment.

Two styles of public service vehicles are exhibited by the Packard Motor Car Co.,

The Pope Mfg. Co., Hartford, Conn., is represented by two public service vehicles, a combination chemical and hose wagon and a police patrol wagon. The former is built on a specially designed chassis with 136-inch wheelbase, and is equipped with the regular four-cylinder, 50 horsepower Pope-Hartford pleasure car motor. Transmission and running gear are the same as used in the touring cars, except that tire sizes have been increased to 39 x 6, front and rear, and the gear ratio reduced to accommodate the increased load and permit of a speed of 50 miles an hour. The chemical equipment and hose lines are practically the same as

Syracuse, N. Y.; the Lansden Co., Newark, N. J. Bearing the legend "Bellevue and Allied Hospitals," the ambulance shown by the White Co. is the largest of the three, and differs from the other two in that it is driven by steam. The regular 40 horsepower steam pleasure car chassis, with slightly heavier springs serves for a mounting for the conventional ambulance body. Also shown by the White Co., a trim built gasoline propelled patrol wagon shares the attention given the ambulance. The body is mounted on the regular White 1,500-pound delivery car chassis, with 20-30 horsepower motor and all the distinctive White



KNOX COMBINATION PUMPING AND CHEMICAL FIRE ENGINE

Detroit, Mich. Both are built on the regular Packard "30" chassis, such as is used in the 1911 model pleasure cars, and embrace a combination fire squad and chemical wagon and a police patrol wagon. Extra long goosenecks permit the use of heavier springs, the large rear step or platform being supported by a fork from the goosenecks. This, with larger tires—36 x 5 being used for both front and rear—constitutes the only change made in the chassis. Two hundred and fifty feet of hose, a 35-gallon chemical tank, two three-gallon tanks, axes, lanterns and a fire bell complete the equipment, but leave sufficient room for seats for seven men and the driver. The patrol wagon is similar to the usual type of such vehicles. The body, which conforms in general with horse-drawn patrols, is equipped with electric dome lights, storm curtains and a canvas stretcher. The seating capacity is nine passengers and the driver.

those on the former cars, but the seating capacity is greater, there being seats provided for a squad of 12 men and the driver. The patrol wagon is new only in the sense that it has never before been shown in a New York show, having been built two years ago for the city of Hartford, where it has been in daily use ever since. A regular 1909 model touring car engine furnishes the motive power and the chassis, while specially built for the purpose, differs but slightly from the regular Pope-Hartford pleasure car construction of that date, a slightly longer wheelbase (130 inches), and larger tires being the principal changes. The body is similar to others of the class in which recalcitrants are conveyed to their temporary abiding places, and is equipped with electric dome lights and a stretcher.

Of power driven ambulances there are three exhibited—one each by the White Co., Cleveland, Ohio; The H. H. Franklin Co.,

earmarks are apparent in its make-up. The body conforms to the usual type of patrol wagon body, except that it is full paneled.

Light gray outside and pure white inside, the ambulance shown by the H. H. Franklin Mfg. Co., is a little less somber than are the other two which are finished throughout in darker colors. Body fittings are a little more elaborate than is the general case, and include wash basins and a cabinet for the reception of bandages and similar medical paraphernalia. The body is mounted on the regular 18 horsepower, commercial vehicle chassis, and remains unchanged, except for a slight alteration of the springs to allow for the lighter body and load to be carried. Pneumatic tires are used.

The Lansden electric ambulance is noteworthy because of its solid tires and unique spring suspension. Coil springs, four of which are ranged one behind the other at each corner of the chassis, permit of a degree of flexibility so great that the use of

solid tires is made feasible, and it is claimed that the car so equipped rides easier and with less vibration than any other. With the exception of this change of spring suspension, the chassis remains the same as the Lansden delivery wagon.

Also under the general classification of public service vehicles comes the "Tren-

ton" tower wagon exhibited by the General Vehicle Co., Long Island City, N. Y. The wagon is intended for use in the maintenance and repair of overhead trolley and electric light systems. Mounted on a standard two-ton electric truck chassis, the upper half of the tower telescopes into the lower half and is raised or lowered by

means of a hand winch. When fully extended it is 25 feet high, and a swivel top permits of a wide range of action. The lower compartment is arranged for carrying supplies, and in addition an emergency crew of six or eight men may be transported, which is more than sufficient for the common kind of accidents.

Summary of the Vehicles Exhibited and of Their Features

Alden-Sampson Mfg. Co., Detroit, Mich.—Six Sampson water cooled, chain driven trucks. Two 1,000 pound, two cylinder, 18 horsepower delivery wagons; one each four cylinder, 25 horsepower, one ton trucks; 33 horsepower, two ton truck; 33 horsepower, three ton truck; 40 horsepower, four ton truck, and one five ton truck chassis. Features: Large motor bearings; motor suspended on springs; enclosed chain drive; rear auxiliary springs and radiators suspended on springs in larger models. Chassis price range, \$2,100-\$3,200.

American Locomotive Co., New York City—Two Alco four cylinder, water cooled, chain driven trucks. One each three and five ton trucks and one chassis. Features: Cylinders cast in pairs; set spark; selective transmission; I-beam radius rods at sides. Price range, \$3,400-\$4,500.

Anderson Electric Car Co., Detroit, Mich.—Four Detroit electric cars. One delivery wagon, three pleasure cars and two chassis. Features of pleasure cars: Direct drive; left hand drive. Mechanical changes: New drum type controller; wheelbase lengthened to 85 inches. Price range, \$1,700-\$3,400.

Atlas Motor Car Co., Springfield, Mass.—Two Atlas two cylinder, two cycle, water cooled, shaft driven cars. One 1,500 pound delivery wagon, one taxicab and one chassis. Features: Two cycle motor; left hand drive. Chassis price, \$2,000.

Autocar Co., Ardmore, Pa.—Eight Autocar two cylinder, 18 horsepower, water cooled, shaft driven commercial cars. Two each busses, open express wagons and full panel delivery wagons; one each chemical fire wagon and armored bank wagon and two chassis. Features: Speed governor on engine; unit power plant; multiple disk dry plate clutch. Mechanical changes: Three-quarter platform spring suspension in rear. Price of chassis, \$2,150.

Brush Runabout Co., Detroit, Mich.—Three Brush single cylinder, water cooled, chain driven delivery cars. One each open and closed delivery cars and one runabout delivery car. Features: Ten horsepower balanced single cylinder motor; multiple disk clutch; single hand lever control. Price, \$685.

Franklin, H. H., Mfg. Co., Syracuse, N. Y.—Four Franklin four cylinder, air cooled, shaft driven, 18 horsepower commercial cars. One each taxicab, ambulance, delivery wagon and 2,000 pound truck. Feature: Worm drive. Mechanical changes: Valves changed to act separately as in pleasure cars. Chassis price range, \$2,100-\$3,200.

Garford Co., Elyria, Ohio—Two Garford four cylinder, water cooled, friction drive, three ton trucks and one chassis. Features: Double disk friction transmission. Price range, \$2,250-\$3,250.

General Vehicle Co., Long Island City, N. Y.—Five General Electric commercial vehicles. One each 700 pound and 1,000

pound delivery wagons; one electric light maintenance wagon; one one ton truck; one five ton truck, and one chassis. Price range, \$1,550-\$4,500.

Grabowsky Power Wagon Co., Detroit, Mich.—Four Grabowsky two cylinder, water cooled, chain driven trucks. Three 35 horsepower, one ton trucks; one 40-45

ton truck chassis; one six cylinder, 60 horsepower fire engine, and one four cylinder, 40 horsepower patrol wagon. Price range, \$3,100-\$8,500.

Kissell Motor Car Co., Hartford, Wis.—One Kissell four cylinder, water cooled, chain driven, 50 horsepower, three ton truck and one chassis. Features: Three speed selective transmission; brakes on jackshaft; ignition by high tension magneto and Atwater Kent unispartaker. Price range, \$3,350-\$3,500.

Lansden Co., Newark, N. J.—Five Lansden electric commercial vehicles. One ambulance and one each one ton express wagon and truck; two ton moving van and five ton truck. Features: Left hand drive; spiral springs on five ton models. Price range, \$2,350-\$5,400.

Locomobile Co. of America—Two Locomobile four cylinder, water cooled, chain driven delivery wagons—one each 30 and 35 horsepower. Price range, \$1,500-\$3,500.

McIntyre Co., Auburn, Ind.—Two McIntyre two cylinder, chain driven trucks. One 22 horsepower, one ton truck, and one 14 horsepower, air cooled delivery wagon. Features: Unit power plant; governor on engine. Mechanical changes: Gasolene tank fitted with auxiliary supply system. Price range, \$465-\$1,650.

Mack Bros. Motor Car Co., Allentown, Pa.—Six Mack four cylinder, water cooled, chain driven trucks. Two five ton trucks and one each four ton tank truck, seven ton dumping truck, one and one-half and three ton open trucks. Features: One type and size of motor in all trucks; force feed lubrication; selective transmission with gears always in mesh. Chassis price range, \$2,500-\$5,300.

Metzger Motor Car Co., New York City—Two Hewitt four cylinder, water cooled, chain driven commercial cars and two cylinder truck chassis. One ten ton truck, one one ton delivery wagon and one two cylinder truck chassis. Features of ten ton truck: Removable power plant; underhung rear springs; carburettor intake for hot air only. Mechanical changes: Pressed steel dash; readily removable radiator; new type piston rings in motor. Price range, \$1,500-\$6,300.

Morgan Co., R. L., Worcester, Mass.—One Morgan four cylinder, water cooled, chain driven, five ton truck. Features: Overhead valves; cylinder heads removable; inlet and exhaust manifolds cast integral with cylinders. Mechanical changes: Cast instead of disk wheels. Chassis price, \$4,750.

Packard Motor Car Co., Detroit, Mich.—Seven Packard four cylinder, water cooled commercial cars. Four three ton trucks, one each police patrol wagon, light delivery car, chemical fire wagon and three ton chassis. Price range, \$3,400-\$4,400.

Peerless Motor Car Co., Cleveland, Ohio—One Peerless four cylinder, water cooled,

CENSUS OF THE SHOW.

Total Exhibitors	304
Exhibitors of Cars	33
Exhibitors of Accessories	253
Exhibitors of Motorcycles	18

GASOLENE COMM'L VEHICLES.

One Cylinder	3
Two Cylinder	10
Two Cylinder (two cycle)	2
Four Cylinder	40

Total Gasolene Comm'l Vehicles 64

ELECTRIC VEHICLES.

Pleasure Cars	7
Commercial Cars	16

Total Electric Vehicles

PUBLIC SERVICE VEHICLES.

Gasolene	6
Electric	2
Steam	1

Total Public Service Vehicles ..

CHASSIS.

Gasolene:	
Two Cylinder	5
Two Cylinder (two cycle)	1
Four Cylinder	10
Electric	5

Total Chassis

Air Cooled Vehicles	5
Water Cooled Vehicles	91

Total Vehicles

horsepower, three ton truck, and one chassis. Features: Removable unit power plant; three speed planetary transmission; removable bodies. Price range, \$2,100-\$3,500.

Hupp-Yeats Electric Car Co., Detroit, Mich.—One Hupp-Yeats electric pleasure coupe and one chassis. Motor and rear axle in unit housing; Exide battery. Price, \$1,750.

Knox Automobile Co., Springfield, Mass.—Two Knox water cooled commercial cars. One four cylinder, 40 horsepower, five

chain driven, four ton truck and one chassis. Features: Low center of gravity; large driving wheels; long stroke motor; four speed selective transmission. Price range, \$3,500-\$3,800.

Pierce-Arrow Motor Car Co., Buffalo, N. Y.—One Pierce-Arrow four cylinder, water cooled, chain driven, five ton truck chassis. Features: Three point suspension of motor and transmission; worm gear drive. Chassis price, \$4,500.

Pope Mfg. Co., Hartford, Conn.—Two Pope-Hartford four cylinder, water cooled commercial cars. One 50 horsepower chemical fire wagon and one 40 horsepower police patrol.

Randolph Motor Car Co., Chicago, Ill.—One Randolph two cylinder, 22 horsepower water cooled, chain driven, one ton truck and one chassis. Features: Opposed motor; selective transmission. Mechanical changes: Bosch high tension magneto added; mechanical oiler placed in crankcase. Price range, \$1,850-\$2,200.

Rapid Motor Vehicle Co., Pontiac, Mich.—Two Rapid four cylinder, water cooled, chain driven trucks. One each one ton delivery wagon and three ton truck and two chassis. Features: Cylinders cast en bloc; brakes equalized; enclosed chain drive on one and two ton trucks. Mechanical changes: Frames trussed; Bosch high tension ignition added. Price range, \$2,300-\$3,500.

Reliance Motor Truck Co., Owosso, Mich.—Two Reliance four cylinder, water cooled, chain driven trucks. One each five ton dumping truck and open body truck and one chassis. Mechanical changes: Power plant changed from two cycle to four cylinder four cycle; T-head motors; cylinders cast in pairs. Price range, \$3,500-\$5,000.

Reo Motor Truck Co., Lansing, Mich.—Two Reo single cylinder, water cooled, chain driven commercial cars. One 1,500 pound delivery wagon and one 700 pound delivery wagon. Features: Single cylinder; thermo-syphon cooling; planetary transmission. Price range, \$650-\$750.

Stearns Co., F. B., Cleveland, Ohio—One Stearns four cylinder, water cooled, shaft driven, five ton truck. Features: Sub-frame construction; heavy duty motor; large driving wheels. Chassis price, \$3,400.

Studebaker Automobile Co., South Bend, Ind.—Four Studebaker electric cars. Two pleasure cars, one five ton truck, one 1,000 pound delivery wagon and one chassis. Features: Differential eliminated by the use of two motors; series-parallel continuous torque controller; enclosed spur gearing between motor and countershaft. Price range of pleasure cars, \$1,500-\$1,750. Price range of commercial cars, \$1,875-\$4,975.

Ward Motor Vehicle Co., New York City—

Two Ward electric delivery wagons. One 1,000 pound, full panel delivery wagon and one 1,500 pound open delivery wagon. Features: Continuous torque controller; single roller chain drive from armature to countershaft to rear wheels. Price range, \$1,600-\$2,300.

Waverley Co., Indianapolis, Ind.—Three Waverley electric cars. Two delivery wagons and one pleasure coupe. Features: Shaft drive; left hand control. Price range, \$1,800-\$2,280.

White Co., Cleveland, Ohio—Five White four cylinder, water cooled commercial cars, one chassis and one 40 horsepower steam ambulance. One three ton open truck, one three ton dumping truck, one one and one-half ton truck, one 1,500 pound delivery wagon and one patrol wagon. Features: All shaft drive except three ton trucks; four speed selective transmission with fourth speed an overstep; long stroke motor; external manifolds eliminated. Price range, \$2,500-\$4,500.

Willys-Overland Co., Toledo, Ohio—Three Overland four cylinder, water cooled, shaft driven commercial cars. One each 25 horsepower, closed delivery wagon; one open express wagon, and one 40 horsepower, one ton truck. Features: Pneumatic tires; planetary transmission. Price range, \$1,000-\$1,500.

Two New and Novel Truck Tires Appear in the Accessory Department

With accessories going out with Part I of the show, and few, if any, coming into Part II, it is hardly to be expected that the exhibitors who remained would uncover anything new or radical which had not been shown the week before. But there is at least one important exception—the new solid clincher tire, made by the Diamond Rubber Co., of Akron, Ohio. This tire with its rim is of the true clincher type, and is particularly suited to light trucks not exceeding 3,000 pounds; it is held in place by compression of the bead of the tire under the clincher part of the rim. To obviate the tendency to creep and securing greater rigidity at the base, the tire has diagonal cross bars seated in the base, imbedded in cement at the center and engaging under the clincher part of the rim. As one of the chief advantages for such equipment is claimed the fact that pneumatic tires may be substituted for the solid in a few minutes' time and without changing the rim in any way. The same company also shows spliceless tires in the side wire and demountable wire mesh base types, as well as a new type of beaded flange for the latter style of equipment.

A new demountable solid tire also is disclosed by the Republic Rubber Co., of Youngstown, Ohio; it embodies some novel features. It is of the clincher flange type, with the flanges offset far enough to prevent the bolts from being sheared off by contact with rails or curbstones. Cross wires are imbedded 1½ inches apart, being led through a central portion of hard rubber

which serves as support and forms the entire lower central part of the tire. The lower half of the tire is covered with three layers of heavy fabric which prevents the ends of the cross wires from coming into contact with the bare flanges of the rim. It is made in both the single and twin style.

The Ajax-Grieb Rubber Co., the Century Rubber Trading Co., the Continental Caoutchouc Co., the Empire Tire Co., the Firestone Tire & Rubber Co., Gibney & Bros., the Hartford Rubber Works, the Michelin Tire Co., Morgan & Wright, Motz Clincher Tire & Rubber Co., the Pennsylvania Rubber Co., the Stein Double Cushion Tire Co., the Swinehart Tire & Rubber Co., the Thermoid Rubber Co., the United States Wheel Co., all show solid styles of tires adapted to commercial vehicle use, but they are the same as were displayed in Part I.

The small number of new accessory exhibitors who were not among those present during the first week specialized in motor-cycle supplies and accessories.

The revised list of exhibitors during the second week is as follows:

Ajax-Grieb Rubber Co., New York City (22)—Ajax tires.

Ajax Trunk & Sample Case Co., New York City (549)—Tire trunks.

Albert Bros., Brooklyn, N. Y. (616)—Bodies for delivery wagons.

Allers, Harry A., New York City (595)—Solarine.

American Ball Bearing Co., Cleveland, Ohio (177)—Ball bearings and axles.

American Ever Ready Co., New York City (242)—Ever Ready batteries, lamps, etc.

Apple Electric Co., Dayton, Ohio (239)—Dynamos, storage batteries and lighting accessories.

Arnold, N. B., Brooklyn, N. Y. (547)—Slik-up tire preparation.

Atlantic Refining Co., Cleveland, Ohio (318)—Arco Spitzoff metal polish.

Auburn Auto Pump Co., Auburn, N. Y. (325)—Pumps.

Automobile Appliance Co., New York City (588)—Specialties.

Automobile Club of America, New York City (327)—Maps, books, flags, etc.

Automobile Lighting Co., Springfield, Mass. (619)—Fary light system.

Automobile School, Y. M. C. A., New York City (302)—Educational exhibit.

Auto Specialties Co., New York City (311)—Ciglia Glare Dimmer.

Automobile Topics, New York City (596)—Publications.

Automobile Tire Co., New York City (423)—Tires.

Auto Improvement Co., New York City (241)—Self-starting devices and accessories.

Auto Supply Mfg. Co., Brooklyn, N. Y. (618)—Steel lined tubing.

A-Z Co., New York City (597)—Radiators, hoods, mudguards, metal hampers.

Badger Brass Mfg. Co., Kenosha, Wis. (126)—Solar lamps and generators.

Baker Sales Co., New York City (422)—Specialties.

MEN OF NOTE IN THE FIELD OF ACCESSORY MANUFACTURE

A collage of ten black and white portraits of men in the automotive accessory industry, arranged in a decorative layout with various frame shapes and captions.

- L. J. Chandler**
Gen. Mgr. Chandler Co.
- P. J. W. Kelly**
Mgr. C. F. Splittdorf
- C. A. Mezger**
Pres. C. A. Mezger Inc.
- J. L. Gibney**
J. L. Gibney & Bro.
- Jno Gordon Jr.**
Mgr. The Sireno Co.
- C. B. Woodworth**
Mgr. Leather Tire Goods Co.
- F. R. Simms**
Pres. Simms Magneto Co.
- H. C. Haight**
Pres. Wright Wrench & Forging Co.
- A. P. Warner**
Genl. Mgr. Warner Inst. Co.
- J. S. Bretz**
Pres. J. S. Bretz Co.

- Baker & Co., F. A., New York City (701)—Specialties.
- Baldwin Chain & Mfg. Co., Worcester, Mass. (135)—Baldwin chains and recoil checks and Brown steering gears.
- Balzer, Gus, New York City (592)—License plates, monograms and sundries.
- Barthel, Waly & Miller, New York City (584)—Schafer ball bearings.
- Batavia Rubber Co., Batavia, N. Y. (278)—Batavia tires.
- Benford, E. M., Mount Vernon, N. Y. (419)—Spark plugs and timers.
- Best Ignition Equipment Co., New York City (405)—Best spark plugs.
- Bicycling World and Motorcycle Review, New York City (700)—B. W. & M. R.
- Bliven & Carrington, Inc., New York City (538)—E-Z-Way grease.
- Booth Demountable Rim Co. (259)—Demountable rims.
- Bosch Magneto Co., New York City (224)—Ignition systems.
- Bowser & Co., S. F., Fort Wayne, Ind. (191)—Bowser gasoline and oil storage apparatus.
- Bretz Co., J. S., New York City (586)—U. & H. magnetos, F. & S. annular ball bearings and Bowden wire fittings.
- Briggs Mfg. Co., Elkhart, Ind. (291)—Briggs magneto.
- Briscoe Mfg. Co., Detroit, Mich. (186)—Radiators and fittings.
- Brown Lipe Gear Co., Syracuse, N. Y. (170)—Transmissions, differentials and steering gears.
- Calmon Asbestos & Rubber Works of America, New York City (415B)—Packaging.
- Carpenter Steel Co., Reading, Pa. (216)—Frames, axles, etc.
- Castle Lamp Co., Toledo, Ohio (181)—Lamps.
- Castle Lamp Co., Amesbury, Mass. (553A)—Safety night pilot lamp.
- Century Rubber Trading Co., New York City (322)—Tires.
- Champion Ignition Co., Detroit, Mich. (627)—Coils, timers, etc.
- Chandler Co., Springfield, Mass. (153)—Nameplates and monograms.
- Chilton Co., Philadelphia, Pa. (600)—Publications.
- Class Journal Co., New York City (505)—Publications.
- Clayton Air Compressor Co., New York City (610)—Tire pumps.
- Cleveland Speed Indicator Co., Cleveland, Ohio (254)—Cleveland speed and time indicators.
- Coes Wrench Co., Worcester, Mass. (155)—Wrenches.
- Columbia Lubricants Co., New York City (223)—Lubricants.
- Columbia Nut & Bolt Co., Bridgeport, Conn. (154)—Lock nuts.
- Connecticut Telephone and Electric Co., Meridian, Conn. (152)—Shock absorbers, magnetos, spark coils and ignition specialties.
- Consolidated Rubber Tire Co., New York City (148)—Tires.
- Continental Caoutchouc Co., New York City (228)—Continental tires and rims.
- Continental Rubber Works, Erie, Pa., (144)—Tires.
- Cook's Sons, Adam, New York City (157A)—Lubricants.
- Couch & Seeley Co., Boston, Mass. (588)—Casgrain speedometer.
- Cramp & Sons Ship and E. B. Co., Wm., Philadelphia, Pa. (187)—Bronze and bearing metals.
- Crucible Steel Co., Lansdowne, Pa. (285)—Crucible steel castings.
- Cross Distributing Co., Frank H., New York City (603)—Supplies.
- Cupror Co., The, New York City (318)—Metal alloys.
- Dahlstrom Metallic Door Co., Jamestown, N. Y. (536B)—Doors and window frames.
- Denegre Demountable Rim Co., Birmingham, Ala. (563)—Demountable rims.
- Deridon Forge Works, C., New York City (300)—Forgings and parts.
- Diamond Chain & Mfg. Co., Indianapolis, Ind. (139)—Chains and sprockets.
- Diamond Rubber Co., Akron, Ohio (128)—Diamond tires.
- Dietz Co., R. E., New York City (189)—Lamps.
- Dixon Crucible Co., Jos., Jersey City, N. J. (182)—Lubricants.
- Dorian Remountable Rim Co., New York City (511)—Dorian remountable rims.
- Downing, Chas. J., New York City (604)—Supplies.
- Driggs-Seabury Ordnance Corp., Sharon, Pa. (253)—Crank shafts and frames.
- Eagle Co., Newark, N. J. (605)—Windshields and spark plugs.
- Eclipse Machine Co., Elmira, N. Y. (720)—Motorcycle and bicycle parts.
- Edmunds & Jones Mfg. Co., Detroit, Mich. (157)—Lamps.
- Edison Storage Battery Co., Orange, N. J. (257)—Storage batteries.
- Eisemann Magneto Co., New York City (234)—Magnetos.
- Electric Speedometer & Dynamometer Mfg. Co., Washington, D. C. (506)—Hopkins "Dynatak."
- Electric Storage Battery Co., Philadelphia, Pa. (227)—Accumulators.
- Empire Tire Co., Trenton, N. J. (231)—Empire tires.
- Ernst's Sons, C. F., Buffalo, N. Y. (514)—Turntables.
- Excelsior Motor & Mfg. Co., Chicago, Ill. (246)—Motors.
- Fay Machine Tool Co., Philadelphia, Pa. (536)—Automobile machinery.
- Fedders Mfg. Co., Buffalo, N. Y. (539)—Radiators.
- Findeisen & Kropt Mfg. Co., Chicago, Ill. (571)—Carburettors and specialties.
- Firestone Tire & Rubber Co., Akron, Ohio (164)—Firestone solid tires and rims.
- Fisk Rubber Co., Chicopee Falls, Mass. (178)—Fisk tires and rims.
- Flechter & Co., L. V., New York City (158)—Carburettors.
- Flentje, Ernest, Cambridge, Mass. (546)—Hydraulic recoil preventer.
- Foster Co., Walter H., New York City (570)—Specialties.
- Frasse Co., Peter A., New York City (306)—Tubing and tools.
- Frost Gear & Tool Co., Jackson, Mich. (309)—Gears.
- G & J Tire Co., Indianapolis, Ind. (131)—G & J tires.
- Gabriel Horn Mfg. Co., Cleveland, Ohio (180)—Gabriel exhaust horns and Foster shock absorbers.
- Garage Equipment Mfg. Co., Milwaukee, Wis. (510)—Gem spark plug wrench.
- Gardner Engine Starter Co., Chicago, Ill. (551)—Starting devices.
- Geiszler Bros. Storage Battery Co., New York City (513)—Storage batteries.
- Gemmer Mfg. Co., Detroit, Mich. (245)—Steering gears and parts.
- Gibney & Bro., Jas. L., Philadelphia, Pa. (557)—Gibney solid tires.
- Globe Anti-Friction Roller Bearing Co., Brooklyn, N. Y. (583A)—Roller bearings.
- Goodrich Co., B. F., Akron, Ohio (127)—Goodrich tires.
- Goodyear Tire and Rubber Co., Akron, Ohio (122)—Goodyear tires and air bottles.
- Gray & Davis, Amesbury, Mass. (130)—Lamps.
- Gotham Aluminum Solder Co., New York City (553)—Solder.
- Hardy Co., R. E., Chicago, Ill. (264)—Starite spark plugs.
- Harris Oil Co., R. A., Providence, R. I. (162)—Lubricants.
- Harrison Radiator Co., Lockport, N. Y. (607)—Radiators.
- Hartford Automobile Parts Co., Hartford, Conn. (536A)—Specialties.
- Hartford Rubber Works Co., Hartford, Conn. (125)—Hartford tires.
- Hartford Suspension Co., Jersey City, N. J. (156)—Truffault-Hartford shock absorbers and Hartford auto-jacks.
- Havoline Oil Co., New York City (303)—Lubricants.
- Haws, Geo. A., New York City (260)—Lubricants.
- Hayes Mfg. Co., Detroit, Mich. (302)—Radiators, hoods and fenders.
- Heinze Electric Co., Lowell, Mass. (184)—Magnetos, coils and ignition devices.
- Herz & Co., New York City (190)—Magnetos and ignition devices.
- Hess-Bright Mfg. Co., Philadelphia, Pa. (304)—Ball bearings.
- Hilliard Clutch & Machinery Co., Elmira, N. Y. (568)—Clutches.
- Hoffecker Co., Boston, Mass. (236)—Speedometers.
- Hoffnung & Co., Ltd., S., New York City (585)—Coventry chains, "Fastnut" lock washers and Polyrhoe carburetter.
- Hollingshead Co., R. M., Camden, N. J. (512)—Whiz automobile specialties.

- Homo Co. of America, Jersey City, N. J. (261)—Homo carburetter.
- Horseless Age, New York City (558)—Publications.
- Howard Demountable Rim Co., Trenton, N. J. (323)—Howard demountable rim.
- Hydraulic Oil Storage Co., Detroit, Mich. (507)—Oil tanks and storage systems.
- International Atcheson Graphite Co., Niagara Falls, N. Y. (238)—Gredag and Oil-dag.
- International Engineering Co., New York City (601)—R B F ball bearings.
- International Metal Polish Co., Indianapolis, Ind. (613)—Blue Ribbon polish.
- Johns-Manville Co., H. W., New York City (255)—J-M non-burn brake lining.
- Johnson & Co., Isaac G., Spuyten Duyvil, N. Y. (287)—Forgings and castings.
- Jones Speedometer Co., New York City (141)—Speedometers, odometers, annunciators and specialties.
- Jones & Co., Phineas, Newark, N. J. (136)—Wood wheels and rims.
- Keystone Lubricating Co., Philadelphia, Pa. (612)—Keystone oils and grease.
- Keystone Steel Casting Co., Chester, Pa. (503)—Crucible steel castings.
- King Optical Co., Julius, New York City (556)—Goggles.
- Kokomo Electric Co., Kokomo, Ind. (174)—Kingston coils and timers.
- Lebanon Steel Castings Co., Lebanon, Pa. (237)—Steel castings.
- Lefever Arms Co., Syracuse, N. Y. (543A)—Specialties.
- Lehman Mfg. Co., New York City (159)—L-H-L ignition system.
- Lever Wrench Co., Newark, N. J. (611)—Tools.
- Light Mfg. & Foundry Co., Pittstown, Pa. (134)—Aluminum parts and castings.
- Link Belt Co., Philadelphia, Pa. (235)—Chains.
- Livingston Radiator & Mfg. Co., New York City (250)—Radiators.
- Lovell-McConnell Mfg. Co., Newark, N. J. (226)—Klaxon horns and Raiswell jacks.
- Lutz-Lockwood Mfg. Co., Aldene, N. J. (590)—S-X ignition devices.
- Marburg Bros., New York City (307)—Mea magnetos.
- Merchant & Evans Co., Philadelphia, Pa. (501)—Hele-Shaw universal clutch, Star jacks, etc.
- Mesinger, H. F., New York City (723)—Saddles.
- Mezger, C. A., Inc., New York City (142)—Windshields and "Soot-proof" plugs.
- Michelin Tire Co., Milltown, N. J. (225)—Michelin tires.
- Miller, Chas. E., New York City (161)—Supplies.
- Miller Rubber Co., Akron, Ohio (249)—Tires.
- Miller's Sons, Wm. P., Long Island City, N. Y. (565)—Excelsior fibrous oils.
- Morgan & Wright, Detroit, Mich. (132)—Morgan & Wright tires.
- Morrison-Ricker Mfg. Co., Grinnell, Ia. (719)—Ristfit gloves.
- Mosler & Co., A. R., New York City (179)—Spitfire spark plugs.
- Motorcycling, Inc., Chicago, Ill. (717)—Publications.
- Motor Car Equipment Co., New York City (722)—Accessories.
- Motor Vehicle Publishing Co., New York City (552)—Publications.
- Motor, New York City (555)—Publications.
- Motz Tire & Rubber Co., Akron, Ohio (248)—Tires.
- Muncie Gear Works, Muncie, Ind. (244)—Parts.
- Mutual Auto Accessories Co., New York City (583)—Supplies.
- Myhtib Composition Co., Hartford, Conn. (160)—Preservative for tires.
- Nathan's, New York City (724)—Specialties.
- National Carbon Co., Cleveland, Ohio (133)—Dry cells.
- National Tube Co., Pittsburg, Pa. (138)—Shelby seamless steel tubing.
- Newark Rivet Works, Newark, N. J. (295)—Windshields.
- New Departure Mfg. Co., Bristol, Conn. (234)—Ball bearings.
- New England Automobile Journal, Providence, R. I. (593)—Publications.
- New Jersey Tube Co., Newark, N. J. (294)—Specialties.
- Newmastic Tire Co., New York City (502)—Tire filling compound.
- New Process Vulcanizer Co., Toledo, Ohio (290A)—Vulcanizers.
- New York Coil Co., New York City (574)—Ignition systems.
- New York & New Jersey Lub. Co., New York City (141)—Lubricants.
- Nonpareil Horn Mfg. Co., New York City (589)—Automobile horns.
- Noera Mfg. Co., Waterbury, Conn. (273)—Pumps and oil cans.
- North East Electric Co., Rochester, N. Y. (621)—Specialties.
- North & Judd Mfg. Co., New Britain, Conn. (324)—Automobile trimmings.
- Novelty Mfg. Co., Jackson, Mich. (533)—Hoods, mudguards and tanks.
- Oliver Mfg. Co., Chicago, Ill. (165)—Peerless jacks.
- Parker Motor Co., Hartford, Conn. (283)—Parker motors.
- Pennsylvania Rubber Co., Jeannette, Pa. (146)—Pennsylvania tires.
- Perfection Spring Co., Racine, Wis. (541)—Automobile springs.
- Philadelphia Steel & Forge Co., Philadelphia, Pa. (315)—"P F Standard" alloys.
- Pioneer Valve Tool Co., Southport, Conn. (620)—Valve grinding tools.
- Pittsfield Spark Coil Co., Dalton, Mass. (168)—Magnetos, coils, plugs and ignition devices.
- Post & Lester Co., Hartford, Conn. (550)—Accessories.
- Power Wagon Pub. Co., Chicago, Ill. (561)—Publications.
- Prosser & Son, Thos., New York City (599)—Krupp steels.
- Protectoid, New York City (305A)—Varnish protecting liquid.
- Randall-Faichney Co., Boston, Mass. (149)—Jericho exhaust horns, B-line grease guns and Bing spark plugs.
- Randerson Auto Parts Co., New York City (540)—Parts.
- Reinhold Noflux Aluminum Solder Co., Newark, N. J. (426)—Solders.
- Rielly & Son, P., Philadelphia, Pa. (566)—Lap robes.
- Remy Electric Co., Anderson, Ind. (147)—Magnetos.
- Republic Rubber Co., Youngstown, Ohio (151)—Republic tires.
- Ross Gear & Tool Co. (284)—Tools and steering gears.
- Royal Equipment Co., Bridgeport, Conn. (252)—Band brakes and brake lining material.
- Scranton Auto Equipment Co., Philadelphia, Pa. (564)—Headlight controller.
- Sheldon Axle Co., Wilkes-Barre, Pa. (617)—Axles and springs.
- Sheu-Dexter Mfg. Co., New York City (721)—Headlight controller.
- Simms Magneto Co., New York City (537)—Simms magneto.
- Simonds Mfg. Co., Fitchburg, Mass. (598)—Tools.
- Smith Co., A. O., Milwaukee, Wis. (137)—Gears and parts.
- Sparks-Withington Co., Jackson, Mich. (308)—Fans, stampings and screw machine products.
- Spicer Mfg. Co., Plainfield, N. J. (169)—Spicer universal joints.
- Splitdorf, Inc., C. F., New York City (129)—Splitdorf magnetos, plugs and ignition devices.
- Standard Roller Bearing Co., Philadelphia, Pa. (163)—Roller bearings.
- Standard Welding Co., Cleveland, Ohio (176)—Electrically welded tubing and parts.
- Standard Thermometer Co., Boston, Mass. (286)—Standard speedometer.
- Stanley, John T., New York City (554)—Oils and greases.
- Star Rubber Co., Akron, Ohio (251)—Star tires.
- Star Starter Co., New York City (543)—Starting appliances.
- Stein Double Cushion Tire Co., Akron, Ohio (256)—Tires.
- Stevens Mfg. Co., New York City (292)—Specialties.
- Stewart Machine Works, Alfred C., Los Angeles, Cal. (622)—Stewart carburetters.
- Stewart & Clark Mfg. Co., Chicago, Ill. (230)—Speedometers.
- Stromberg Motor Devices Co., Chicago, Ill. (243)—Carburetters.
- Swinehart Tire & Rubber Co., Akron, Ohio (171)—Swinehart tires.
- Syracuse & Elbridge Glove & Leggin Co., Syracuse, N. Y. (718)—Gloves and leg-gins.

THE MOTOR WORLD

MEN OF NOTE IN THE FIELD OF ACCESSORY MANUFACTURE



Thermoid Rubber Co., Trenton, N. J. (232)—Tires, tubes and brake linings.
 Timken Roller Bearing Co., Canton, Ohio (166)—Roller bearings.
 Timken-Detroit Axle Co., Detroit, Mich. (167)—Axles.
 Tingley & Co., Chas. O., Rahway, N. J. (602)—C. O. T. electrical horn.
 Tracy, Joseph, New York City (545)—Dynamometer and testing apparatus.
 Troy Carriage Sunshade Co., Troy, Ohio (548)—Windshields and tops.
 Turner Brass Works, Sycamore, Ill. (240)—Brass parts and fittings.
 Tuttle Motor Co., Canastota, N. Y. (608)—Motors.
 U. S. Light & Heating Co., New York City (150)—Storage batteries.
 United Steel Co., Canton, Ohio (320)—Vanadium steel.
 United States Wheel Co., New York City (305)—Solid tires.
 Vacuum Oil Co., Rochester, N. Y. (185)—Lubricants.
 Valentine & Co., New York City (183)—Varnishes.
 Valve Grinding Tool Co., Southport, Conn. (620)—Valve grinding tools.
 Vanadium Sales Co., Pittsburg, Pa. (321)—Steels and alloys.
 Vanadium Metals Co., Pittsburg, Pa. (312)—Victor vanadium bronze.
 Van Wagner Co., E. B., Syracuse, N. Y. (262)—Dies and finished metal castings.
 Veeder Mfg. Co., Hartford, Conn. (124)—Tachometers and odometers.
 Vesta Accumulator Co., Chicago, Ill. (233)

—Accumulators and ignition specialties.
 Warner Gear Co., Muncie, Ind. (175)—Gears and parts.
 Warner Instrument Co., Beloit, Wis. (172)—Warner autometers and clocks.
 Warner Mfg. Co., Toledo, Ohio (247)—Transmissions and steering gears.
 Wayne Oil Tank and Pump Co., Fort Wayne, Ind. (544)—Wayne oil tanks.
 Weed Chain Tire Grip Co., New York City (143)—Weed tire chains.
 Western Tool & Forge Co., Brackenridge, Pa. (314)—Forgings and tools.
 Western Mfg. Co., Newark, N. J. (609)—Western shock absorbers.
 Wetherill Finished Castings Co., Philadelphia, Pa. (594)—Castings and parts.
 Wheeler & Shebler, Indianapolis, Ind. (145)—Carburetors and magnetos.
 Whitlock Coil Pipe Co., Hartford, Conn. (289)—Intake and exhaust pipes.
 Whitney Mfg. Co., Hartford, Conn. (123)—Whitney chains.
 Willey Co., New York City (420)—Automobile paints.
 Williams Co., J. H., New York City (173)—Forgings.
 Willard Storage Battery Co., Cleveland, Ohio (310)—Elba lighting outfits.
 Wright Wrench & Forgings Co., Canton, Ohio (401)—Wrenches.
 Young, Orlando W., Newark, N. J. (293)—Lubricants.

Motorcycles.

American Motor Co., Brockton, Mass. (715)—M. M.

Aurora Automatic Machinery Co., Chicago, Ill. (710)—Thor.
 Consolidated Mfg. Co., Toledo, Ohio (713)—Yale.
 Detroit Motorcycle Mfg. Co., Detroit, Mich. (725)—Detroit.
 Emblem Mfg. Co., Angola, N. Y. (711)—Emblem.
 Excelsior Supply Co., Chicago, Ill. (709)—Excelsior.
 Harley-Davidson Motor Co., Milwaukee, Wis. (707)—Harley-Davidson.
 Hendee Mfg. Co., Springfield, Mass. (702)—Indian.
 Marvel Motorcycle Co., Brockton, Mass. (716)—Marvel.
 Merkel Light Motor Co., Pottstown, Pa. (714)—Merkel.
 Miami Cycle & Mfg. Co., Middletown, Ohio (706)—Racycle.
 New Era Auto-Cycle Co., Dayton, Ohio (724)—New Era Auto-Cycle.
 N. S. U. Motor Co., New York City (705)—N. S. U.
 Pierce Cycle Co., Buffalo, N. Y. (712)—Pierce.
 Reading Standard Co., Reading, Pa. (708)—Reading Standard.
 Reliance Motorcycle Co., Owego, N. Y. (703)—Reliance.
 S. D. Mfg. Co., Brooklyn, N. Y. (720)—S. D.
 Wagner Motorcycle Co., St. Paul, Minn. (722)—Wagner.

Milwaukee's Big Show Brings out Four Milwaukee-made Trucks

Heretofore managed by the Milwaukee Automobile Club, the show which takes place each year in that Wisconsin city famed for the excellence of its beer and other things, and which was opened on Saturday last, 14th inst., for one week's run at the Auditorium, in this season being conducted by the Milwaukee Automobile Dealers' Association. The show is quite "some pumpkins," too. Sixty-two makes of cars are exhibited by 45 exhibitors, 80 of the 250 separate cars on view being trucks and the balance pleasure cars. Accessory exhibitors number 28, the total number of space holders being 73. In the pleasure cars which are on view nothing new is disclosed but in the realm of commercial vehicles four makes, Sternberg, Champion, Brodessa and Stephenson, are shown for the first time this year.

The exhibitors and what they are showing are as follows:

Pleasure cars: Welch Bros. Motor Co., Packard and Rauch & Lang electrics; Studebaker Automobile Co., Studebaker, gasoline and electric, E-M-F 30; Flanders; The Hickman-Lawson-Diener Co., Ford; Emil Estberg, Pope-Hartford, Woods electric, Waverley electric; Johnson Service Co.,

Johnson; Edgar F. Sanger Co., Maxwell and Stearns; American Automobile Co., Pierce-Arrow; Schreiber Motor Car Co., Locomobile, Haynes and Hudson; McDuffee Auto Co., Overland and Stoddard-Dayton; Bates-Odenbrett Auto Co., Overland and Stoddard-Dayton; Buick Motor Co., Buick; E. B. Leverenz, White; Franklin Auto & Supply Co., Franklin and Babcock electric; Orrin R. Hughes, Garford; Mitchell Automobile Co., Mitchell; Kopmeier Motor Car Co., Chalmers and Detroit electric; Johnson Burnham Sales Co., Marion; Albert Smith, Palmer and Singer; Jonas Automobile Co., Cadillac and Peerless; Rambler Garage Co., Rambler; Kissel Kar Co., Kissel; Warren Motor Car Co., Warren-Detroit; Hearne Motor Co., Hupmobile and Hupp-Yeats; J. L. Case Threshing Machine Co., Case; Gove Auto Co., Jackson; Winton Motor Car Co., Winton; F. A. L. Motor Co., Fal; Chas. Abresch Co., limousine bodies; Lozier Motor Car Co., Lozier; Velie Motor Car Co., Velie; Curtis Automobile Co., Reo; James F. Howard, Cole 30; Rider-Lewis Motor Car Co., Rider-Lewis; Henry Motor Car Sales Co., Henry; Cutting Motor Car Sales Co., Cutting; West Side Auto Garage, Auburn; East Side Automobile Co., Great Western.

Commercial vehicles: Commercial Auto Co., Gramm; Emil Estberg, Waverley; Buick Motor Co., Buick; Motor Truck Sales Co., Sternberg; Abresch-Cramer Auto Truck Co., chemical hose truck, auto truck, chassis; Welch Bros. Motor Car Co., Packard; C. F. Megow Co., Champion; Johnson Service Co., Johnson; Brodessa Motor Truck Co., Brodessa; Kissel Kar Co., Kissel; Stephenson Motor Co., Stephenson; Crown Commercial Car Co., Crown; Orrin R. Hughes, Garford.

Accessories: Leo Hofmeister Co., Milwaukee Oil Pump & Tank Co., Kamlee Co., Bartles-Maguire Oil Co., Milwaukee Bronze Casting Co., Wadhams Oil Co., Goodyear Rubber Co., Standard Oil Co., Wayne Oil Tank & Pump Co., Sidney Hirsh Co., Racine Auto Tire Co., Auto Supply Co., Philip Gross Hardware Co., Wallmann Manufacturing Co., Milwaukee Auto Specialty Co., Julius Andrae & Sons Co., Milwaukee Tire Repair Co., King Leather Tire Co., Evinrude Motor Co., Garage Equipment Mfg. Co., Fair Mfg. Co., Taylor & Dahl; Milwaukee Photo Material Co., Milwaukee Trimming Co., L. T. Treleven (Longdin-Brugger Co.), A. J. Monday, Cream City Trimming Co.

Detroit Suffers Two Shows During Same Week

New York has nothing on Detroit. The big city may have had one show extending over two weeks, but Detroit has gone the metropolis one better, and is demonstrating how to hold two shows in one week. It may seem like "exhibiting coal in Newcastle" to hold an automobile show of any sort in Detroit, but despite the fact, there really are two shows in that Michigan city, any they really are both "on the job" at the same time. Of course the show in Wayne Pavilion, the one under the Detroit Automobile Dealers' Association's auspices, is "the" show; the other which is being fostered by what is termed the United Automobile Dealers & Manufacturers' Association in the Regal Motor Car Co.'s big new factory, which is as yet untenanted, is more or less of an eleventh hour affair and somewhat but not wholly an overflow from the first. Thirty-seven exhibitors of cars are housed in Wayne Pavilion and the other show holds 48, of whom 22 show cars and the balance accessories.

For the first time in years, favorable weather and the automobile show have visited Detroit at the same time, and the result was a record breaking crowd for the first night at both the shows. Simplicity seems to be the keynote of the decorative scheme in Wayne Pavilion; the tall illuminated columns and other outre decorations heretofore used are conspicuous by their absence, and their offices are quite as effectively filled by a lattice work around the sides and over the ceiling, over which smilax and roses are trailed in profusion. Not quite so ornate is the other show room, but while it boasts no smilax or roses it still has been embellished by the use of colored bunting and flags, and makes quite a pleasing impression.

Brands of cars are as many in Detroit as are the colors in Joseph's famed coat, and as usual there are several which make

their debut this year at these exhibitions. Included among those cars which have not previously been shown are the Phipps-Grinnel electric pleasure and commercial cars, Federal, Day and Quadru gasoline wagons, and Sibley, Cavao and Wagonhols touring cars.

The list of exhibitors and cars at Wayne Pavilion is as follows:

Neuman-Lane Co., Pierce-Arrow, Standard-Dayton and Rauch & Lang; Grant Bros. Auto Co., Amplex and Chalmers; Phipps-Grinnel Co., Phipps-Grinnel electrics; Hupp Motor Car Co., Hupmobile; Broadway Auto Co., Cutting; Lozier Motor Co., Lozier; Collins Auto Co., Marmon; Imperial Auto Co., Imperial; Van Dyke Motor Co., Van Dyke wagons; Alpena Auto Co., Alpena Flyer; Security Auto Co., Everitt 30; Elmore Auto Sales Co., Elmore and Waverley electrics; Buick Motor Co., Buick and Welch-Detroit; Nederlander Auto Sales Co., Haynes; Standard Auto Co., Packard; Seidler-Miner Auto Co., Jackson; Olds Motor Work, Oldmobile; Warren Motor Co., Warren-Detroit; Bruch Detroit Co., Bruch and Sampson; United Detroit Motor Co., Columbia and Maxwell; Ford Motor Car Co., Ford; Abbott Motor Car Co., Abbott-Detroit; Cunningham Auto Co., E-M-F and Flanders; Lion Motor Sales Co., Lion; J. F. McCue Co., Hupp-Yeats electrics; Annette Auto Garage, Auburn; Overland Sales Co., Overland; Seitz Motor Truck Co., Seitz trucks; Krit Motor Sales Co., Krit; Federal Motor Truck Co., Federal trucks; Detroit Electric Co., Detroit electrics; Gillespie Auto Sales Co., Thomas and Sibley; Rapid Motor Vehicle Co., Rapid trucks; Carter Car Co., Carter cars; Cadillac Motor Co., Cadillac; Winton Motor Carriage Co., Winton; J. P. Schneider, Stevens-Duryea, Locomobile and Alco truck; J. H. Brady Aut. Co., Hudson; Gil-mour Auto Sales Co., Mitchell.

The list of exhibitors and cars at the show in the Regal factory is as follows:

Flint Wagon Works, Whiting; Oakland Motor Sales Co., Oakland; Day Automobile Co., Day trucks; Herreshoff Motor Co., Herreshoff; Overland Motor Sales Co., Overland; Woods Electric Garage, Woods; C. B. Fear Auto Co., Paterson; Montgomery Motor Sales Co., American; Small Motor Car Co., Cavao; International Harvester Co. of America, International; Mayhew & Mayhew, Imperial; Cole Motor Sales Co., Cole; W. J. Marshall, Paige-Detroit, Carhartt; Smitz Chain Co., chains; West Side Motorcycle, Emblem, Haverford and Marvel motorcycles; Baker Drop Forge, auto castings; Frost Gear Co., gears; Knop Battery Co., batteries, the Wizard lamps; J. T. King & Co., die and babbitt castings; Detroit Wire Spring Co., seat springs; King Shock Absorber Co., shock absorbers; Economy Magneto Co., magnetos; Searchlight Gas Co., Quadru truck; Detroit Steering Wheel & Windshield Co., windshields and steering wheels; American Top Co., auto tops; Pennsylvania Tire Co., auto tires; Collins-Green M. E. C. Co.; Auto Crank Shaft Co., auto crank shafts; Muzzy-Lion Co., babbitt metal and die castings; Corcoran-Detroit Lamp Co., auto lamps; J. M. Smith & Co.; Oldborg Mfg. Co., Quality mufflers; Michigan Magneto Co., magnetos; Crown Oil Co., auto oils and greases; Ireland & Matthews, auto parts; Detroit Auto Specialty Co., auto accessories; Sewell Cushion Wheel Co., auto wheels; Peninsular Milled Screw Co., screw-machine products; Emil Grossman Co., windshields, spark plugs and jumpers; Superior Motor Car Co., Superior van; Ideal Motor Truck Co., Ideal trucks; Grand River Auto Co., Gramm; Grabowsky Power Wagon Co., Grabowsky; W. C. Wagonhols, Wagonhols; Regal Motor Car Co., Regal; Columbus Buggy Co., Firestone-Columbus.

St. Paul Employs Smilax to "Set-Off" its Show

St. Paul's first show, which is being given by automobile dealers of that city in conjunction with thirteen Minneapolis firms, was opened on Tuesday last, 10th inst., at the Minnesota National Guard Armory and will run for five days or until Saturday, January 14. Smilax, which seems to be in universal demand for the decorating of automobile show places forms the principal decoration of the big drill hall in which the automobiles are staged. The outside of the building also has been embellished by the addition of a "way of light" which for brilliancy is said to rival the St. Paul shopping district at Christmas time. Of the 34 makes of cars which are exhibited six makes have not previously been shown at a 1911 show; they include Rauch & Lang and

Columbus electric, Avery and Schurmeier trucks and Halladay and Whiting gasoline cars. The 24 car and seven accessories exhibitors comprising the show are as follows:

Standard Auto Co., Locomobile; Stearns Auto Co., Stearns; P. J. Downes Co., Rambler; Royal Tourist Co., Royal Tourist; Alco Motor Sales Co., Baker electric; Northwest Cadillac, Cadillac; United Motor Co., Columbia and Maxwell; St. Paul Auto Co., Chalmers and Hudson; Deer-Weber Co., Velie; H. H. Roller, Overland; J. N. Knutson, Cole; Pence Auto Co., Buick; St. Paul Motor and Vehicle, Thomas Flyer, Oldsmobile and E-M-F; H. Paulman Co., Pierce-Arrow Kissel Motor Co., Kissel; Electric Car & Bat. Co., Rauch and Lang electric; White Bear Auto Co., Oakland

Columbus electric, Regal, Firestone, Premier; Schurmeier Motor Co., Schurmeier truck; Heaney Auto Co., Halladay and Whiting; Avery Mfg. Co., Avery truck; Central Auto Co., Marmon and Reo; Genge Power & Vehicle Co., Grabowsky truck; Winton Motor Car Co., Winton; Hupp-Yeats Electric Co., Hupp-Yeats electric.

Accessories—St. Paul Fire & Marine, Electric Co., Auto Engine Works, Racine Tire Co., Cornplaster Oil Co., C. J. Smith & Co., Metal Shelter Co.

Care should be taken to see that rims are kept well painted. As soon as the paint chips off, rusting starts, and a rusted rim is one of the surest means of making the tire bill grow.

Philadelphia Sets Its Show in Paris and Venice

Losing nothing from the point of attractiveness because of the fact that it is strictly a local affair, the tenth annual show of the Philadelphia Licensed Automobile Dealers' Association, which was opened on Saturday evening last, 14th inst., and which will run until January 28, this year has increased to such an extent that two buildings are necessary for the housing of all the exhibits. While the setting of last year's show was striking, this year's is even more effective.

There are 41 makes of pleasure cars on view, 21 of which are in the Third Regiment Armory, and the remaining 20 in the First Regiment Armory. They include three brands—Mora, Welch and Stanley steamer, —which did not make their appearance at either of the New York shows.

Usually considered ugly, except by those who "tote guns," the interior of the First Regiment Armory has undergone a complete metamorphosis. Supported by massive white columns surmounted by ornamental peristyles, a false ceiling entirely hides the gaunt, unsightly girders which uphold the armory roof. Myriads of twinkling electric lights serve to enhance the contrast between the many colored automobiles and the white background in which they are set. One end of the structure is rendered picturesque by an immense painting which portrays a scene on the Champs Elysee in Paris.

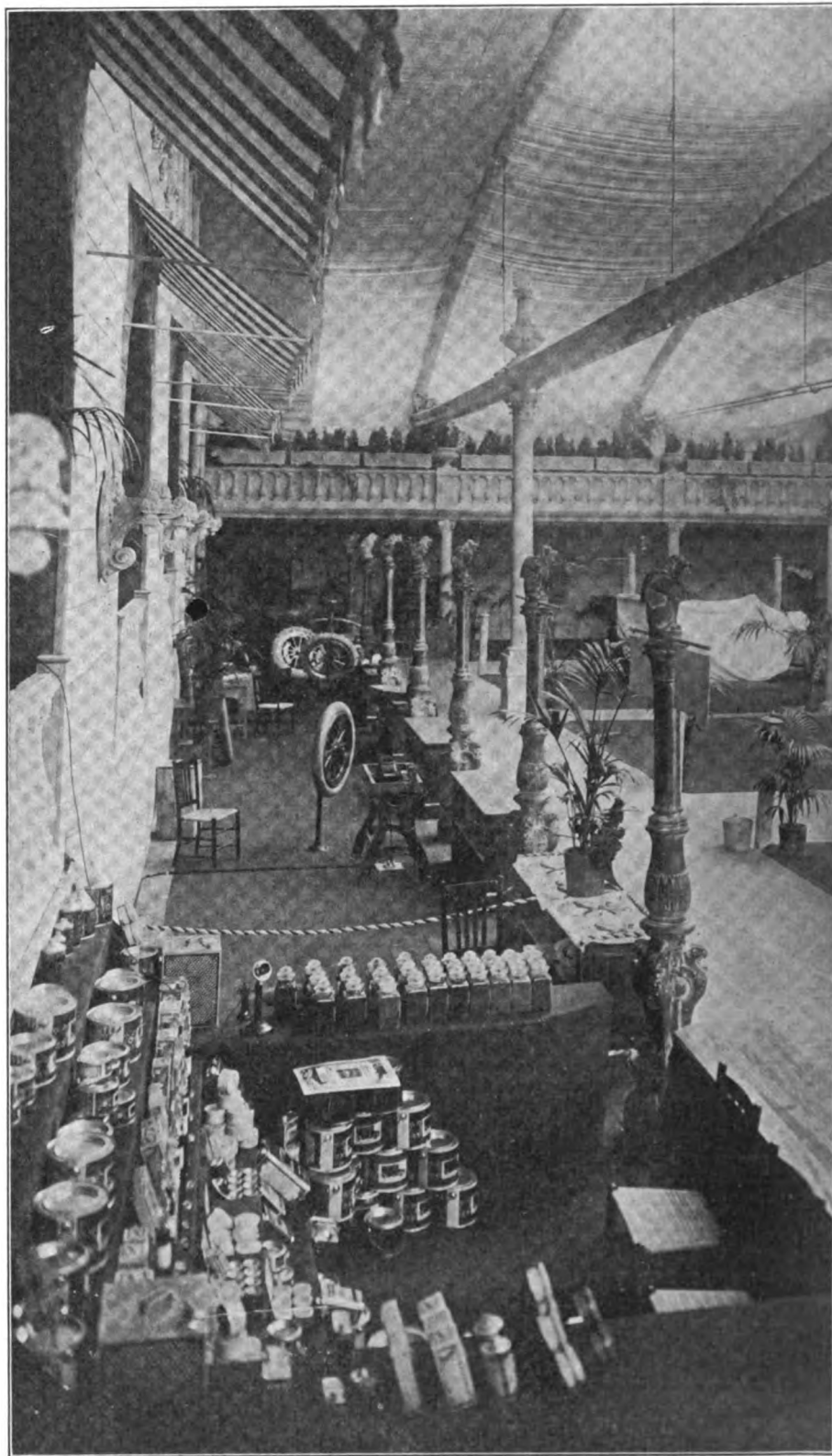
Even more resplendent are the decorations in the Third Regiment Armory, where also a complete transformation is evident. Blue is the color predominating in the decorations, and a "sky" of this delicate Italian hue serves to hide the nakedness of the roof. As in the other building, an immense painting embellishes one end of the drill hall, only here the scene is laid in Venice, and the picturesque Doges' Palace reproduced on the canvas is made even more realistic by the addition of the ever-present red and white striped Venetian awnings. Great columns topped with soft-glowing electric lights support the "sky," and potted flowers and ferns are set out on the balustrades.

When the show opened Saturday night, a large crowd flocked in, but not all the exhibits were in place, and the spectators hardly received their full money's worth. Hard work on Sunday, however, and the arrival of several show cars from New York served to fill the vacant spaces, and there since has been small cause for complaint.

The pleasure cars in the First Regiment Armory are as follows: Prescott Adamson, Reo; Automobile Sales Corporation, Peerless and Cadillac; Buick Motor Co., Buick and Welch; Foss-Hughes Motor Car Co., Pierce-Arrow; G. H. Gantert, Stearns and Selden; D. W. Harper, Stanley steamer;

Jackson-Marion Motor Co., Jackson and Marion; Johnson Motor Car Co., Haynes and Carter car; Mitchell-Lewis Motor Co.,

Palmer & Singer Distributing Co., Palmer-Singer; Philadelphia E-M-F Co., Hudson and Garford; A. G. Spalding & Bros.,



"ACCESSORY ROW" IN THE PHILADELPHIA SHOW

Mitchell; North Philadelphia Automobile Station, Knox; Olds-Oakland Co., Oakland; Overland-Marion Motor Co., Overland;

Stevens-Duryea; Stoddard-Dayton Automobile Co., Stoddard-Dayton and Courier; Studebaker Brothers Co., Studebaker, E-M-F

and Flanders; Tioga Auto Co., National and Hupmobile; United Motor Philadelphia Co., Maxwell and Columbia; W. Wayne Davis Co., Everitt.

The cars staged in the Third Regiment Armory are as follows: Automobile Co. of Philadelphia, Marion; Autocar Co., Autocar; Chadwick Engineering Works, Chadwick; Chalmers-Hipple Motor Co., Chalmers-Detroit; Gawthrop & Wister, Elmore; General Motor Car Co., Lozier; Gorson's Automobile Exchange, Mora; C. A. Haines Co., Mercer; Hills Motor Car Co., Royal Tourist; Locomobile Co. of America, Locomobile; Longstreth Motor Car Co., Pullman

Shock Absorber, Auto Tire Preserver Co., Erbestos Brake Lining Co., Parker Auto Lock, M. L. Snyder, Hydraulic Oil Storage Co., International Correspondence School and Howard Demountable Rim Co.

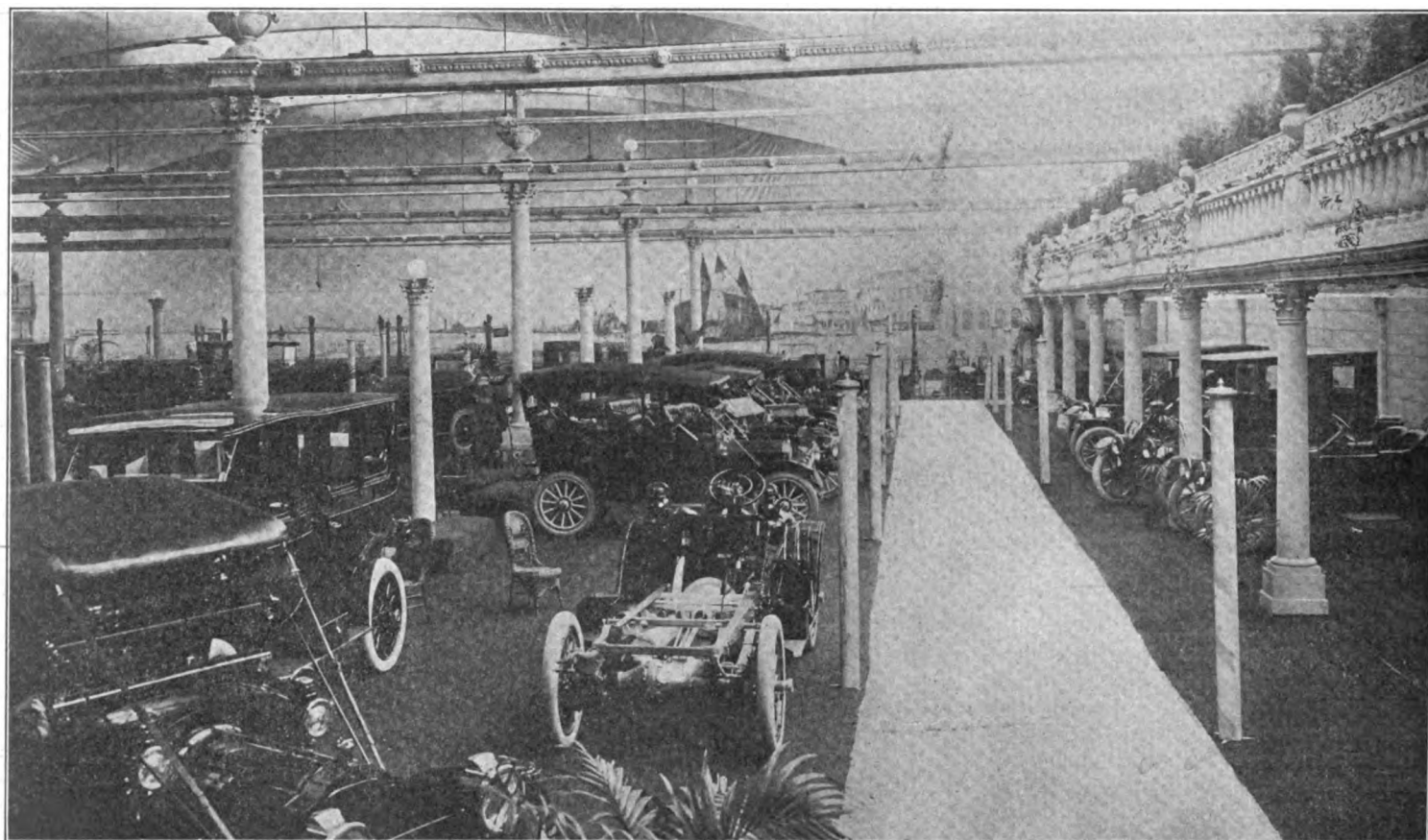
Oldfield Still Seeking Los Angeles Money.

Barney Oldfield, the chronic "outlaw" whom the A. A. A. leniently let down with a year's suspension, on Sunday, 8th inst., made a bid for the permanent suspension which many supposed would be his portion in the first place. At a personally conducted race meet on the outlaw Ascot Park track in Los Angeles he drove an exhibition mile in

per went through the motions of acting as officials of the meet, assisted by Bill Pickens and J. Alex Sloan, who share Oldfield's earnings.

Automobile Not Dangerous, Says Court.

That a motor car is not a dangerous vehicle and has as much right on the road as a horse-drawn buggy or other vehicles again has been declared, this time by Judge J. M. Johnson, sitting in the Missouri Court of Appeals, in Kansas City. The opinion was handed down in a suit for \$1,000 damages which Mrs. Ida M. Daly, of Avenue City, Mo., had brought against William



PHILADELPHIA SHOW IN THE THIRD REGIMENT ARMORY WITH VENICE IN THE DISTANCE

and Alco; Marquette Motor Co., Rainier; Motor Co., Premier; Olds Motor Works, Oldsmobile; Oxford Automobile Co., Brush; Packard Motor Car Co., Packard; Pope-Hartford Sales Corporation, Pope-Hartford; Regal Sales Co., Regal; White Co., White; Winton Motor Carriage Co., Winton.

Accessories, the display of which is said to be the largest ever shown at an automobile show in Philadelphia, are located in the Third Regiment Armory, where they will remain during the two weeks which the show will run. Included in this department are: Philadelphia Storage Battery Co., Auto Equipment Co., J. H. McCullough & Son, Manufacturers' Supplies Co., J. Evanson & Sons, Keim Supply Co., Penn Auto Supply Co., Auto Wind Shield Co., S. F. Bowser Co., Keystone Lubricating Co., Reagon Non-Skid Co., Charles E. Miller, Flentje

what was given out as 52 seconds; the feature of the trial was that Oldfield was accompanied by Jim Jefferies, the prize fighter. Oldfield also won a five-mile race in 5:01½, defeating J. B. Ryall, who drove Oldfield's Knox car, and Ben Kerscher, Oldfield's employe who drove his employer's Darracq. Ryall, however, led a five-mile handicap in which Kerscher and A. Oakerman (Petrel) ran as named. Oakerman got his slice of the pin money in another five-mile handicap in which he defeated H. Buckley (Pope-Toledo) and E. H. Bechtel (Parry). A novelty race was won by W. H. Carlon (Winton), with H. Faust second. Kerscher and Ryall "obliged" with trials for "world's records," although such records no longer are within the scope of their kind. Frank Chance, the Chicago baseball player; Eddie Maier and Jack Kip-

F. Maxwell, of St. Joseph, Mo. The horse which Mrs. Daly drove became unmanageable at the approach of Maxwell's car and bolted, upsetting the buggy. The circuit court of Buchanan county, in which the case first was tried, awarded the damages asked to the complainant, but in charging the jury the presiding judge gave erroneous instructions, according to the opinion of the higher court, when he remarked that "when an automobile is driven on the public highways it is a dangerous appliance, as a matter of law," etc. Judge Johnson, in reversing the judgment, said: "An automobile is not a dangerous appliance, and it is recognized to be on the same grounds as the horse and buggy and vehicles of the same class. The driver of a motor car has equal rights on the road with other vehicles."

NEW YORK LAW RECEIVES A JOLT

Unconstitutional to Require Motorists to Bear Witness Against Themselves—Decision in *Rosenheimer Case*.

If the State Supreme Court upholds the opinion of Judge Crain, of the Court of General Sessions, of New York County, rendered on Monday last, 16th inst., that portion of the Callan law making it a felony on the part of motorists concerned in accidents who fail to seek out a policeman or the nearest police station and disclose their identity, will be without force or effect, and will be nullified.

The unexpected decision is the unexpected outgrowth of the celebrated *Rosenheimer case*. E. T. Rosenheimer, it will be recalled, collided in the dark with a buggy containing two girls and a man, all of whom were thrown out, one of the girls being killed. Rosenheimer did not stop to view the results of the accident, but later in the night was arrested, and in due course was indicted for murder in the first degree. At the trial the court permitted the jury to consider only a degree of manslaughter, and then Rosenheimer promptly was acquitted, the evidence showing that the buggy had no lights and was in the middle of the road, where it was "sidewiped" by Rosenheimer's car. Although Rosenheimer's action in running away after the accident left him small sympathy, he suffered several weeks' imprisonment pending his trial, and when acquitted it was thought the last had been heard of the case. Subsequently, however, and due largely to the noise made by the ingeniously active person who frequently gets into print via the so-called National Highway Protective Society, Rosenheimer was rearrested and re-indicted for the felony comprised by that section of the Callan act which Judge Crain's decision has upset.

Rosenheimer's counsel, James W. Osborn and Gilbert D. Lee, demurred to the indictment, and set up as a defense that the clause in question which substantially required a man to give evidence against himself is unconstitutional, a defense which Judge Crain sustained. He accordingly dismissed the indictment, but the district attorney will carry the point to the Supreme Court of the State for final decision. It was the first case in which the issue was raised, and as other states have similar laws, the effect of the decision is of more than local importance. Judge Crain's decision was as follows:

The defendant demurs to an indictment purporting to charge him with a felony in the violation of a provision contained in subdivision 2 of section 290 of chapter 374 of the laws of 1910, commonly called the Callan Law. The demurrant challenges the constitutionality of such provision, and moreover contends that the allegations in

the indictment fail to allege and negative a violation of such law.

The material portions of the statute are that "Any person operating a motor vehicle who, knowing that injury has been caused to a person or property, due to the culpability of the said operator, or to accident, leaves the place of said injury or accident without stopping and giving his name, residence, including street and street number, and operator's license number to the injured party, or to a police officer, or in case no police officer is in the vicinity of the place of said injury or accident, then reporting the same to the nearest police station, or judicial officer, shall be guilty of a felony * * *"

These words form part of a new article in relation to motor vehicles inserted by way of amendment to the Highway Law. Section 295 of article 11 of that law (L. 1909, chap. 30, being chap. 25 of the Consolidated Laws), repealed by the law now challenged as to constitutionality, provided that "in case of accident to a person or property on the public highway, due to the operation thereon of a motor vehicle, the person operating such vehicle shall stop, and, upon request of a person injured, or any person present, give such person his name and address, and, if not the owner, the name and address of such owner," while subdivision 307 of the same law made a violation of this provision a misdemeanor.

These provisions followed by a few years the extensive use of motor vehicles and first appeared in 1904. (L. 1904, chap. 538). Similar laws were enacted at about the same time in Maine, New Jersey, Michigan, Florida, California and other states.

The provision under consideration is limited by its context to injuries inflicted upon public highways and by proper construction to such as are caused directly or indirectly by the motor vehicle operated.

The constitutional provision invoked by the demurrant forms part of subdivision 6 of article 1 of the Constitution of this State, commonly called the Bill of Rights. It reads, "nor shall he be compelled in any criminal case to be a witness against himself." The common law protects against compulsory self-accusation. Declaratory statutes enforce and apply this protection, and the constitutional provision quoted safeguards it from impairment or abolition by legislative enactment. History discloses the origin of the common law rule and the reasons for it are stated in judicial opinions. The constitutional provision referred to has often been judicially construed and applied. In some of these cases, there was no mandatory statute requiring self-accusation, and in some such the primary question was the bona fide of the interposition of the plea of privilege as for instance whether it was merely invoked to screen or shield third parties. In another class of cases the breadth and scope of this constitutional provision was considered by comparing it with statutes making compulsory the giving of self-incriminating evidence and purporting to afford to the one so testifying immunity from criminal prosecution predicated upon his disclosures. In these the primary subject of consideration was whether the breadth and scope of the immunity provision was co-extensive with the constitutional exemption. But under whatever circumstances construed, it has invariably been held that its interpretation is to be liberal rather than literal, and broad rather than narrow.

Where the immunity from prosecution afforded by statute is not co-extensive with the constitutional provision, a person may decline to make when asked what he in

good faith believes may become self-accusatory disclosures, whether oral or documentary, sworn or unsworn, and although the demand that he make the same is preferred before even the initiation of a purely collateral preliminary inquiry. In aid of such declination he may lawfully move to set aside a subpoena served or disobey it, and contest its validity in proceedings to punish him as for contempt. He may, if a party decline to be sworn or affirmed, and whether a party or mere witness may assert his privilege when interrogated upon oath, and so acting he is at every step protected by the principle of the common law as preserved and safeguarded by the Constitution.

The word "witness" as used in the constitutional provision, although never judicially defined, has been applied in the cases to one potentially able to give testimony, to one called upon to testify and to one required to furnish documentary proof.

The phrase "in any criminal case" as so used has been judicially applied to proceedings under the executive, legislative or judicial powers of government directed against the person invoking the provision, or against co-offenders with such person, or against unrelated third parties, to such as are preliminary, collateral or independent, and both to such as are pending and not pending at the time of the assertion of the privilege. With respect to subject-matter, disclosures protected against, include not merely admissions per se evidencing criminality, but also statements by possibility forming a link in what might be a chain of inculcating evidence, and to disclosures which, apart from the fact disclosed, might reveal to the inquirer independent sources of information tending to establish the guilt of the person invoking the constitutional provision. In a word, the phrase, "nor shall he be compelled in any criminal case to be a witness against himself" has been adjudicated to mean that no man shall be compelled to an utterance of any fact by word or pen which utterance might then or afterwards be used as evidence against him in proceedings then pending or afterwards to be brought.

A similar provision applicable to proceedings in the Federal Courts is found in the Fifth Amendment to the Constitution of the United States.

While reference is made to six illustrative cases, this decision rests upon analogy rather than precedent, as no case has adjudicated upon the constitutionality of the law which the people charge the defendant violated.

In 1861 one Hackley was sworn as a witness before the grand jury on an examination of a complaint against certain aldermen and others for feloniously receiving a gift of money under an agreement that their votes should be influenced thereby. Being interrogated, he declined to answer some questions on the alleged ground that any answers which he could give would disgrace him and have a tendency to accuse him of crime.

[Here follow references to the six cases in question: (1) that of one Hackley, in 1861, who, when declining to answer questions put to him by the court in a criminal action against himself, was punished for contempt of court, but succeeded on appeal to the Court of Appeals in obtaining an opinion from Justice Denio to the effect that an accused need not answer questions which, when followed up by the district attorney's office, might serve to bring forth additional evidence of the existence of which this office was ignorant at

the time the questions were put; (2) the case of one Sharp, in 1887, in which the same rule was applied in reversing judgment obtained by questioning the accused; (3) the case against one Taylor, in 1894, in which the Court of Appeals decided that no person could be compelled to give testimony in a trial against himself or against others which could be used against him as admissions tending to prove his connection with any criminal offense with which he may then or thereafter be charged; (4) the case of one Cargill, in 1901, in which the constitutional privilege of immunity from every species of self-incrimination was upheld; (5) the case of one Levisohn, in 1903, in which the right of a witness to decline to answer incriminating questions was upheld by the Court of Appeals, which, in reversing the judgment of contempt of court, adopted the broad meaning ascribed to this constitutional provision by the United States Supreme Court; (6) the case of one Ferguson, in 1908, in which the accused, a stock broker, was adjudged in contempt of court for refusing to exhibit certain of his books which contained records of all his dealings in stocks, but which judgment was reversed by the Court of Appeals as a violation of the constitutional rights of an accused to refuse to furnish the prosecuting office with evidence against himself. In the case of Ferguson the constitutional privilege was invoked anticipatory to any prosecution against the relator; in the Hackley and Taylor cases it was invoked during the pendency of a preliminary inquiry; in the Cargill case in connection with a special proceeding; and in the Sharp and Levisohn cases during the pendency of criminal actions.]

At the time of the occurrence set forth in the indictment and at the time when the statute challenged as to constitutionality required a statement from the defendant, no prosecution had been begun against the defendant in which respect the defendant's case is similar to the Ferguson case. In the defendant's case, like the cases of Taylor, Cargill and Ferguson, there is concededly no statute affording him immunity from prosecution based upon a criminality which might be evidenced in whole or part by the statement required from him, and his case differs from the cases cited alone in the circumstance that the statement which this defendant was required to make was to be oral and unsworn. In the case cited something under oath was sought to be elicited, save in the Ferguson case, where incriminatory unsworn documentary evidence was required to be produced.

As the test of the constitutionality of a law requiring a person to say or produce something, considered in the light of the provision exempting from self-accusation, is whether that something required to be said or produced is receivable in evidence; it is immaterial whether that demanded is an oral statement provable as an admission against interest or a document receivable in evidence for like reason.

In the statute now under consideration, a person, after the happening of an event, is required as stated to make an oral unsworn statement. The event is one upon which the criminal liability of such person may be predicated. Such person is one in whose presence and under whose observation a fact occurred. He is therefore *prima facie* competent to testify to the same and for this reason one described by the word "witness" as used in the Constitution. The statement is required to be made in either one of two contingencies, namely: (a) where the occurrence is due to the culpability of the one required to make the statement; and (b) contrastively where it is due to acci-

dent. It not being required when the injury is unconsciously as distinguished from knowingly inflicted, the making of it imports knowledge of the occurrence and consciousness of its culpability where culpable, and but for the provision requiring such statement to be made as well when the injury is accidental as when culpable, the mere making of the statement would import an admission of culpability.

The circumstance that the statute also requires the statement to be made where the injury inflicted is due to accident—that is to say without conscious culpability—and that therefore it may conceivably be required where its criminal liability attaches to the defendant from the occurrence, does not make the statute constitutional, for it is sufficient to render it obnoxious to the constitutional provision that the statement required to be made may under some circumstances be self-accusatory or tend to establish a criminal liability or subject the maker to criminal prosecution. It is not necessary to its unconstitutionality that it should inevitably have this effect.

The first count in the indictment alleges that the injuries inflicted by the occurrence respecting which the defendant's statement was required were occasioned by the defendant's culpability. As the demurrer admits this, among other facts competently alleged, it follows that in the case at bar the statement would have been required from the defendant because of his conscious culpability, and therefore the making of the statement would have furnished not merely evidence of the defendant's identity with the operator of the vehicle, and in that connection a link in the chain of evidence against him in the event of his criminal prosecution, but also evidence of admitted culpability.

It is elementary that when a person is injured in person or property, and such injury appears to have been caused by the act or omission of another, the circumstances as ascertained attending the infliction of such injury may indicate a civil and possibly also a criminal liability on the part of such other because of such other's apparent connection with its infliction. Where, for the reason that they indicate criminal liability, a criminal action is begun, the public prosecutor must prove as prerequisites to a lawful conviction; first, the identity of the person prosecuted with the person causing the injury; and, secondly, the latter's criminal culpability with respect to the same. The first, like any other relevant fact, may be proved by the admission of the person prosecuted. When so proved such fact becomes a link in the chain of evidence against him. Thus a person is injured upon a public highway and thereafter dies from the effects of such injury. The injury causing death results from the violent contact of a motor vehicle either directly or indirectly with the body of the person killed. The circumstances discovered by the public authorities indicate that such contact was due either to some act or some culpable negligence on the part of the person operating the motor vehicle. The question arises, who was that person? and it thereupon transpires that under the penalties of the challenged statute such person has said to a police officer in the vicinity of the place where the injury was inflicted, not an eyewitness to the occurrence, "I am the man; I operated the motor vehicle which caused the injury; my address is such a street and such a number, and this is my operator's license number."

The admission so made as an evidentiary fact is testified to by such officer before a grand jury, and in conjunction with other

evidence it produces an indictment. That indictment conceivably charges murder in the first degree (People vs. Darragh, decided by the Appellate Division of the First Department, December, 1910, not reported), possibly manslaughter in its first degree, and, if not, manslaughter in its second degree. A trial of the one indicted follows, and there again such person's statement to the officer to the effect that he was the man who operated the motor vehicle upon the occasion stated in the indictment becomes a link in the chain of evidence against him connecting him with the occurrence as therein alleged.

It follows that the man making the statement whether such statement import conscious culpability or merely his connection with the occurrence has been compelled, in the absence of any statutory immunity against prosecution, to be a witness against himself in a criminal case. Such was the nature of the statement required from this defendant under penalty of conviction of felony should he omit to make it. He has omitted to accuse himself, and the indictment assailed is the pleading initiating the criminal action for his conviction of felony for such omission.

These considerations lead to the conclusion that while the facts in the case at bar are dissimilar from those in the cases cited, they show, if anything, a more obvious infraction of the constitutional provision. In reaching this conclusion the extent of the police power of the state is recognized. The right under it to enact as well considered regulations for the public safety in connection with the operation of motor vehicles upon public highways license and other requirements which have for their object the identification of those violating the motor vehicle law is conceded. (People vs. MacWilliams, 96 App. Div., 176). It is one thing to require operators of motor vehicles to carry identifying indicia before such persons have broken the law, and quite another to demand either that they make self-accusation in case of infringement or furnish in such case a link in a chain of criminal evidence against themselves. The former can be lawfully done. The latter violates the Constitution.

Having reached the conclusion that the statute under which the indictment is found is repugnant to section 6 of article 1 of the Constitution of the State, and that for this reason the amended demurrer must be sustained, it becomes unnecessary to consider the question as to whether the indictment sufficiently alleges the offense sought to be charged.

Demurrer sustained.

Montana Wants Some "Easy Money," Too.

Out in Montana the state authorities view with envy the revenues pouring into the coffers of the commonwealths which were so cautious as to enact state registration and licensing laws, and they intend to "go and do likewise." A. N. Yoder, the new secretary of state of Montana, is particularly outspoken in expressing his views about the requirement of a local automobile law. "It is a somewhat notorious fact," he says, "that virtually every state in the Union has such enactments, and they prove a splendid source of revenue, as well as lessen the danger from accidents through the employment of competent drivers. I think that Montana should have a law covering these subjects."

Increasing the Efficiency of the Motor Truck

Down on the banks of the Saco River, which cuts a very thin and wriggly line in the edge of the map of Maine, two leading industries are carried on in the toy twin cities of Biddeford and Saco. One is the perpetuation of the French-Canadian race and the other is the carding, spinning and weaving of cotton into cloth. Passing over the first pursuit as being irrelevant in the present instance, the second is worthy of special mention here and now for the very good reason that its growth has led to the adoption of the motor truck on a generous scale.

While a large number of automobiles of various types are used in and about the different mills, it is desired at present to draw attention to one particular machine, a small electric which shuttles about the yard of one of them all day long transferring material from one part of the plant to another. During the average working day it carries many tons of cloth between departments, a ton at a time. Each time it backs up to the loading platform it stops less than a minute and then goes away again. Less than a minute to stow a one-ton load and get away again—and the record loading time is 45 seconds!

That is about all that Biddeford has to do with this story. It is honored to the extent that in one of its leading industries they have not only learned to use the motor vehicle, but have learned to use it sufficiently. For be it understood that it is a relatively simple matter to demonstrate exactly how motor vehicle transportation is superior to animal transportation, while it is by no means an easy matter to teach merchants and manufacturers how to employ the commercial motor vehicle to the best possible advantage.

In a sense the commercial vehicle may be said to have arrived. That long-promised era when a large proportion of the automobile industry would be turning its eyes and directing its energies toward the business vehicle at length is materializing, has materialized already to a conspicuous extent. But the commercial vehicle movement has only just begun. Its nascent condition is proven by the fact that the vehicle itself just now is attracting more attention than its use. This is the era of the commercial vehicle. The era of the wise and profitable use of the commercial vehicle is but just beginning to dawn. The proof again is that so few people as yet have learned to distinguish between the mere existence of the machine and its application in a profitable way.

Every business man in the course of a

business day comes in contact with hundreds of products of automatic machine operation for example, yet not one of them has any distinguishing mark to show by what particular machine or process it was evolved. The receipts of express matter bear no indication of the maker of the wagon in which they were delivered; if deliveries are delayed the company forwards no apologies in the name of a horse that happened to be sick nor of a bad highway at the other end of the line that caused some driver to miss a certain train. In the business world products are judged solely by results and the efficiency of a process, a machine or a utensil by the relation between input and output.

The motor wagon is nothing more nor less than a utensil of a distinct class which represents vast improvements over the utensil of the same class which it displaced. But the true measure of its efficiency is not a comparison of its work as offset against that of horse-drawn wagons. It is the relation of its operating cost on a ton-mile basis to that of other motor vehicles actuated under justly similar conditions.

Superficially it might seem that the extent to which the automobile industry is interested in the welfare of the commercial wagon is limited to questions relative to its production and marketing. Actually the interest should go further, for the success of the industry in this branch of its activity depends on the success of the machine in service and the success of the machine in service depends on the intelligence, experience and foresight of the operator, not the driver necessarily, but the owner, wagon boss, head shipper, traffic manager or transportation head.

It has been demonstrated in many ways that there is urgent need for further development in motor vehicle transportation, not so much in the design and construction of the vehicles themselves as in their handling. Design has reached the stage where competition has set in motion a species of automatic evolution. The general intelligence and skill of automobile men who are available for the administration of trucking systems has progressed to a point where it is not impossible to secure uniform service under normal conditions and at an economical rate per vehicle mile or per ton mile. So far the commercial vehicle problem may be said to be, if not solved, at least in a fair way of solution in the natural course of events and by self inductive means.

But such solution as is contemplated in the mere administration of the machine it-

self is not calculated to realize the highest efficiency of the system. No machine will produce properly unless it is properly fed; and the loading problem becomes one of the determining factors in which the automobile industry is bound to take an interest from purely selfish motives. True, the loading problem is no more pertinent to the automobile than it is to the horse-drawn wagon, the freight car, the canal boat or the elevator, but the automobile as a factor in transportation is a link in a chain, and its own efficiency is dependent on the efficiency of the other individual units just as much as they are dependent upon it. The motor truck stands for one factor in the big, modern view of transportation; its success depends largely upon the way in which its sponsors assist in developing the big idea.

There is some difference in the success of the motor vehicle as a business investment, for instance, when the little one-ton truck in Biddeford, Me., which pauses less than a minute in picking up its load, is compared with a similar vehicle in use by a New York department store, almost any one for that matter, in which the vehicle is compelled to wait while a miscellaneous assortment of packages is loaded piecemeal according to destination. The latter operation requires at least half an hour. In some stores, it is true, better systems prevail, so that the actual work of loading is carried on to much better advantage, but generally speaking, a very large proportion of the vehicle's time is waiting time, absolutely dead, non-productive, non-remunerative wait.

For a cue to the successful solution of the loading problem it is only necessary to return for a moment to the textile business. From the very nature of the material and products which it handles a good deal is shop mileage. The consequence is that a very good system of racks, cans and boxes has been developed for receiving partial products directly from one class of machines and feeding it into another. In some cases such receptacles are mounted on castors, in others they are adapted to be transported on flat trucks. With this principle as a groundwork, the textile people have found no embarrassment in the loading of the motor vehicle. Where the loading units are so small as to render considerable handling necessary in making up a load, it frequently is possible to combine a number of them in one way or another, handling practically the whole load at a single operation. Thus, in the case of the little electric referred to before, the load, which consists of

a certain kind of cloth rolled on spindles, the full charge for the vehicle is held in a special form of rack which itself is mounted on castors and trundled on the car at one end of the line and off at the other.

Carrying out the same idea one of the big New York stores, which has become a heavy user of commercial cars, has adopted the plan of having racks made to fit the bodies of the three-ton trucks which are used for its long hauls and for what has been called transportation as distinguished for distribution. Several of the racks are always on hand at the loading platform, so that when the trucks come in light, it is only necessary to withdraw the empty rack, bring up one that is charged by means of a special hand-drawn truck, and slip it into place. The actual loading of the truck thus is performed in a few minutes as compared with half an hour or more by the hand method.

To this general plan of loading the appropriate term "cartridge system" has been applied. In principle there is nothing new about it, but as applied to the motor wagon and carried out in response to the sentiment for time economies in handling materials which the adoption of the automobile has been of material assistance in instigating it is new, very new, indeed.

Upon the development of this system much of the future success of the commercial automobile must depend, and it is destined beyond a doubt to figure extensively in all forms of the transportation of the future. The project of one immense warehouse company may be instanced in this connection. The plan is intended to provide loft facilities for storage and manufacturing purposes at a huge terminal some distance removed from wholesale and retail centers. It includes the maintenance of local distributing stations, one or two local warehouses close to the distributing points and a large delivery and truckage system. The essence of the plan is that by providing adequate transportation the customer is rendered the same sort of storage or manufacturing facilities that he would receive in the immediate neighborhood of his place of business, but at lower rates, taking into account rentals, insurance, freight charges, loading charges and the important item of local transportation.

Naturally the use of motor vehicles figures very largely in the scheme, but it was determined even before the project was put into existence on its present extensive scale that not even the motor truck could ensure the accomplishment of all the economy that was necessary to the successful realization of the ideal that was in the mind of the promoting genius. It was seen at the outset that there would be endless confusion and delay in the handling and distributing of great quantities of varied materials and products unless some method of segregation and concentrating them was

adopted. As a logical conclusion the cartridge system was adopted, and, for descriptive purposes, the name coined to fit it.

The cartridge plan is, in a word, nothing more nor less than the use of a series of permanent packing cases of such a size as to fit the body of the truck units, one, two, three or more cartridges being used for each load, as occasion may require. The cartridges are of such form that they can be handled conveniently at the warehouse by means of industrial trucks and elevators and are packed there in the most economical fashion possible. From the warehouse they go to the distributing stations on transfer trucks, and from the distributing stations they are taken to their various points of destination on smaller trucks or wagons, which are maintained for that purpose exclusively. As far as the use of motor vehicles is concerned, therefore, the plan involves the use of machines in the best way possible. That is, the larger machines are maintained for long hauls exclusively or mainly, the smaller ones for short hauls with more frequent stops, and loading time is cut to a minimum. The cartridges, of course, are returned to the warehouse, sometimes empty, sometimes charged with return goods, for such is the nature of the undertaking that it is possible to handle a certain amount of freight in both directions.

Here is another scheme along the same line—an English one at that. But while British methods in many respects are cumbersome, they frequently reveal an amount of forethought and system which is well worth assimilating, as is true in this case. For many years it has been the custom in and around Manchester, Oldham, Bolton, Blackburn and other manufacturing centers to reduce terminal expenses by the use of "flats." A flat is nothing more nor less than a stout platform, made to last, of course, and with ring bolts around the edges for the attachment of tarpaulins and for lifting chains. The shippers, or shipping contractors, as a rule own the flats and use them over and over, the average life of a good flat being rated at 10 years with good handling.

In practice they are loaded with goods at the shipping point, hauled to the depot and switched from the trucks to the "goods vans" several flats going on each van. At the destination they are switched from the cars to trucks by means of cranes, which are maintained by the railroad companies and delivered. Where large motor vans or lorries are used it has been suggested that several flats be loaded on a lorry and afterward switched to horse trucks, where deliveries are to be made in small quantities. The idea of the cartridge system, in fact, is germinating in England as it is in this country.

As a bit of little known detail, it may be added that the standard flat is about 12

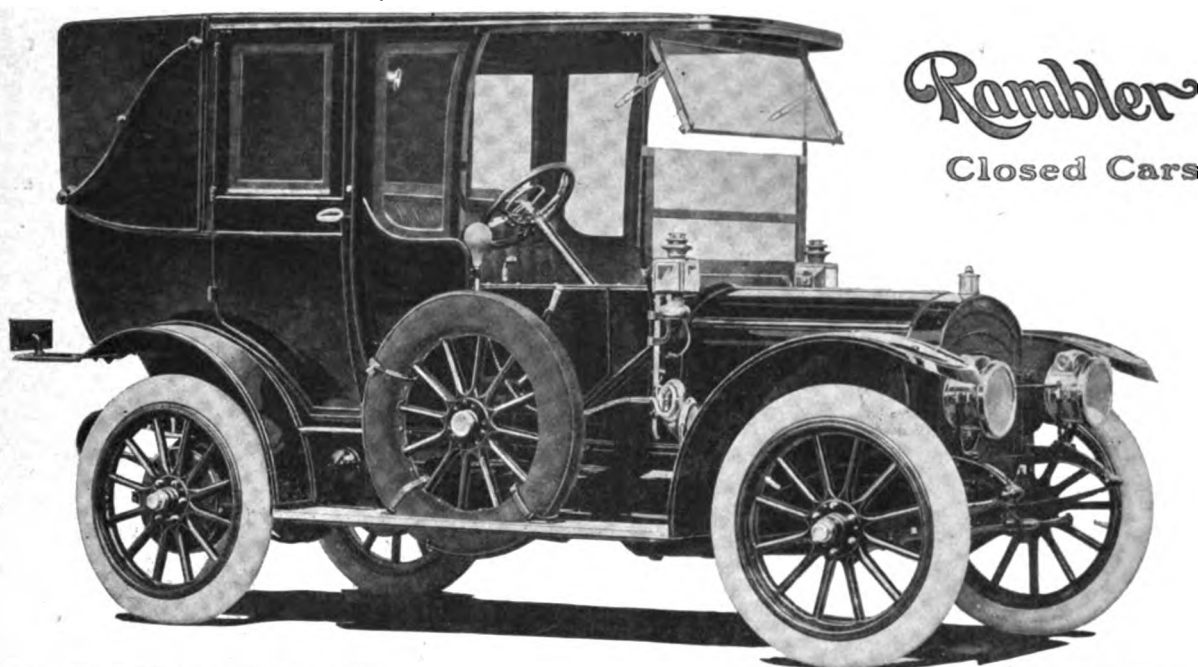
feet by 6½ feet, its area thus being somewhere about 78 square feet, and corresponding pretty closely with the standard horse truck body. The average weight is nothing less than 850 pounds! Surely "8½ cwt." sounds much more reasonable. But at that the railroads return the empty flats free of charge.

Safe to say the average American railroad would balk at the notion of allowing free return of shipping cases that weighed close to 1,000 pounds apiece, likewise the average American shipper would hesitate a long time before giving up \$50 for a platform on which to stow his goods just as a matter of convenience in handling, notwithstanding the discrepancies between labor costs on this and the other side of the Atlantic. But it is by no means a long look into the future to the time when some such idea will have come into general use here, particularly where the motor truck is involved.

And while the generosity of the British railroad still is in mind, it is well to point out that with the flat system, a waiting truck may be loaded at one sweep of a crane, two or three sweeps to a van. What that means in a crowded railroad terminal can only be imagined, there is nothing like it in this country. So the railroads really have their own interests at heart. The only trouble with them is that they are not bright enough to see that the shippers would pay return freight on the empty flats if they were forced to, just for the saving they would still obtain by their use.

So much for England. In the America of multiple process machine tools, rapid production, automatic transfer of materials in factories and labor-saving devices galore, rough tiles for structural work are unloaded one at a time in front of the sidewalk on a busy street, face brick, which must be handled carefully, are passed out two at a time and thumbed by three or four men before they reach the stock pile, and parcels for which the restless purchaser is waiting at home are bandied about the shipping floor of the big department store because some clerk is a little weak on the topography of his own town and often land in the wrong rig, to be actually delivered only after being carried miles out of their way. There is much to be said for the cartridge plan in all its phases.

Confusion with the exhibit of another manufacturer at the Garden show last week caused the Motor World to report that the Simms Magneto Co. was displaying a low-tension, double system magneto. As a matter of fact, and as is fairly well known, the Simms company never has had to do with other than high-tension magnetos, and has no intention of departing from its beliefs in that regard. The engine starter referred to, however, is one of the principal features of the new Simms magneto.



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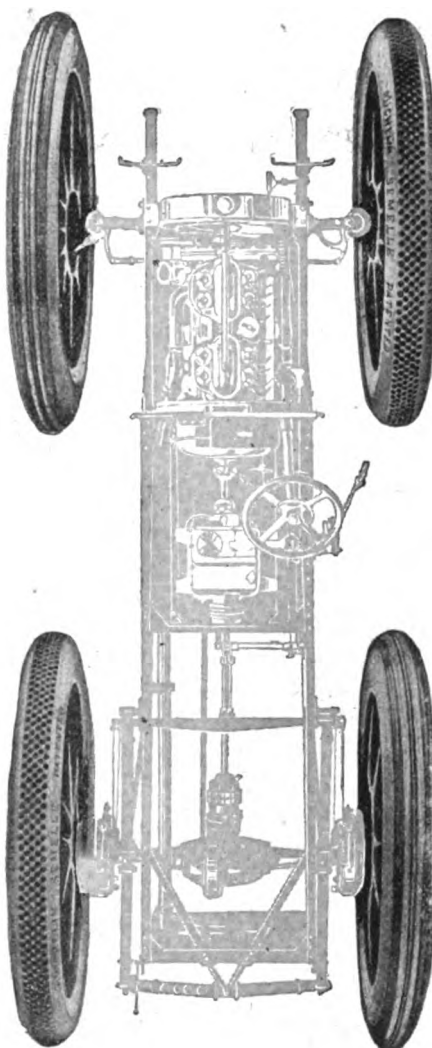
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RECENT PATENTS.

972,391. Speed Varying and Reversing Mechanism. Frederick Mesinger, New York, N. Y. Filed July 22, 1910. Serial No. 573,182.

1. In a speed varying and reversing mechanism, a power shaft, a friction wheel slidably mounted thereon, a first friction disk engaged by said wheel, a second friction disk, means for transmitting motion from the friction wheel to the second friction disk, means for varying the distance between the friction disks, and driving axles carrying said disks.

972,455. Driving Mechanism for Motor Vehicles. Karl A. Kendrick, Detroit, Mich., assignor of one-half to Harrison Geer, Detroit, Mich. Filed Aug. 18, 1909. Serial No. 513,378.

1. Driving mechanism for motor vehicles, comprising a frame, traction wheels, two independent motors, driven shafts connecting the motors independently to the traction wheels, means for disconnecting said motors from said driven shafts, and means for connecting the motors directly together to cause them to turn in unison.

972,541. Detachable Wheel Rim. George E. Kipp, Niverville, N. Y. Filed April 30, 1910. Serial No. 558,653.

1. In a wheel having an inner rim, a detachable outer rim, wedge-blocks carried on the outer surface of said inner rim, and each having a V-shaped nose, complementary blocks carried by the inner surface of said outer rim, and each having, at one end, a V-shaped notch engageable by one of said

V-shaped noses, and means for locking the detachable rim in place.

972,547. Gas Engine. George P. Law, Lansing, Mich. Filed March 16, 1910. Serial No. 549,767.

1. The combination, with the exhaust pipe and the carburetter of a gas engine; of an air inlet pipe which encircles the said exhaust pipe and which is provided at its middle part with a branch for connecting it to the carburetter, said air inlet pipe having air inlet holes in its end portions on the same side as the said branch and having also circumferentially arranged partitions extending part way around it between the said air inlet holes and branch, air passages being formed between the said partitions and pipes on the opposite side of the air inlet pipe from its air holes and outlet branch, whereby the air is caused to flow longitudinally and spirally in contact with the exhaust pipe from each end of the air inlet pipe.

972,560. Sparking Plug. Gottlob Honold, Stuttgart, Germany. Filed Nov. 5, 1907. Serial No. 400,830.

1. In a sparking plug, the combination of a housing having a cylindrical interior, an insulating body loosely fitting therein and having an outwardly tapering conical portion, a ring having an outer diameter corresponding to the inner diameter of the housing and downwardly converging inner and outer faces, fitting snugly in the wedge shaped annular space about the insulating body, and means to wedge the ring tightly into the said space.

972,571. Spraying Device for Internal Combustion Engines. Henry Wilson

Pogue, Decatur, Ill. Filed March 15, 1910. Serial No. 549,398.

A spraying device for internal combustion engines, comprising a spring controlled operating shaft, a cylinder, a piston secured to the shaft and adapted to operate in the cylinder, a supply pipe extended from the cylinder, a spring actuated ball valve in the supply pipe, an outlet pipe extended from the cylinder, a gravity valve mounted in the outlet pipe, spraying means at one end of the outlet pipe, a bearing on the outlet pipe and constituting a guide for the operating shaft, and a plug removably engaging the outlet pipe and constituting a cover for a cleaning vent in the outlet pipe.

972,651. Piston Coupling. William G. Schaeffer, Reading, Pa., assignor to Reading Standard Company, Reading, Pa., a Corporation of Pennsylvania. Filed Jan. 18, 1910. Serial No. 538,609.

1. A wrist pin connection comprising a wrist pin having a longitudinal slot with an intermediate wedge pin guide way, a taper pin in said way with a set screw therefor having an angled head portion, and a U-shaped lock spring, one member of which is strung upon the bolt and the other member of which closely engages the angled head thereof.

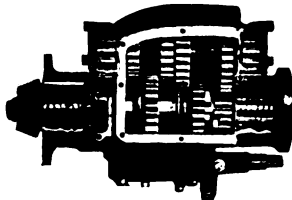
972,692. Magneto Machine for Use in Connection with the Ignition Systems of Internal Combustion Engines. Robert Frederick Hall, Moseley, near Birmingham, England. Filed Aug. 24, 1908. Serial No. 450,077.

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windings, the combination with a hollow armature spindle having end slots affording a bifurcation, of a non-conductive bushing having clearances to receive the bifurcated end of the spindle and having solid portions which pass through the slots and contact means associated with the bushing, and having electrical connections with the windings.

973,162. Tire Retaining Flange for Wheel Rims. Richard S. Bryant, Columbus, Ohio, assignor, by mesne assignments, to The United Rim Company, Akron, Ohio, a Corporation of Ohio. Filed April 6, 1907. Serial No. 366,747.

1. A hollow tire retaining ring formed with a base for engaging and seating the same upon the face of the rim body of a wheel and having a recess formed in its periphery adjacent to the base, and being constructed to have overlapping parts for reinforcing the walls thereof.

974,029. Steam Generating Apparatus for Automobiles. Albert G. Davis, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed June 16, 1904. Serial No. 212,782.

In a steam generating system the combination of a boiler, a burner therefor, automatic variable stroke pumps for supplying water to the boiler and fuel to the burner at constant pressures, and separate controllers for the pumps whereby the pressure of their deliveries may be varied.

974,114. Tire Healing Compound. Henry S. Griswold, Phoenix, Ariz. Filed July 16, 1910. Serial No. 572,380.

1. A tire healing compound comprising

water, flour of slippery elm, a glutinous material, and an antiseptic preservative.

974,136. Cranking Device for Internal Combustion Engines. Charles R. Hall, Monroeton, Pa., assignor of one-fourth to Robert F. Hall, Monroeton, Pa. Filed Sept. 22, 1909. Serial No. 519,052.

1. In a cranking mechanism the combination with an internal combustion engine having a crank shaft and a ratchet sleeve mounted thereon, of a stud shaft disposed adjacent said crank shaft, a second ratchet sleeve carried by said stub shaft for interlocking engagement with said first ratchet sleeve, a plurality of disks disposed in spaced relation upon said stub shaft, a drum concentrically disposed about said stub shaft, a plurality of disks disposed in spaced relation in said drum for alternate engagement between said disks on said stub shaft, an operating shaft rigidly carried by said drum, a cylinder disposed about said operating shaft, a collar slidably disposed within said cylinder, keys carried by said collar for retaining the same from rotation, teeth disposed upon said collar, teeth mounted on said drum for engagement with the teeth on said collar, and means disposed in said cylinder for yieldably holding said collar against said drum.

974,212. Buffer for Automobiles. James Turner and Pearl P. Crabill, Springfield, Ohio, assignors to The Central Brass & Fixture Company, Springfield, Ohio, a Corporation of Ohio. Filed April 13, 1910. Serial No. 555,234.

1. In a buffer for vehicles, a buffer bar, and means on each side of the vehicle for connecting said bar thereto, said means

comprising a two-part head adapted to be secured to said vehicle, the respective parts of said head being pivoted together, together with devices for clamping the respective parts of said head together, substantially as specified.

974,235. Cranking Mechanism for Automobiles. James B. Castle, San Francisco, Cal., assignor of one-half to Robert S. Moore, San Francisco, Cal. Filed Sept. 7, 1909. Serial No. 516,322.

The combination with a casing for attachment to an automobile of a cranking shaft extended therein, said shaft carrying a clutch member for engagement with the clutch member of an engine shaft, a head rotatable within the casing and through which the cranking shaft is slidable, a hub into which the projecting end of said shaft extends, a disk carried by said hub, a dog pivoted to said disk for engagement with the head for the cranking shaft, a rack ring immovable in the casing, a pawl pivoted to the head of the dog for engagement with the said ring to release the dog from engagement with the head of the cranking shaft on a back explosion of the engine being cranked, and devices for imparting rotation to the hub within the casing to operate the cranking shaft.

974,250. Vehicle Wheel. Edmund Joseph Estey, Apponaug, R. I. Filed May 1, 1909. Serial No. 493,342.

In a device of the character described, the combination with a felly provided with an opening formed upon its periphery, of a rim permanently secured upon said felly and provided with an L-shaped slot extending from one edge of the same, a tire-

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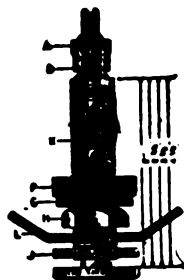
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holding rim adapted to be removably arranged upon said first-named rim, said tire-holding rim being provided with an inwardly extending boss adapted to be inserted within said L-shaped slot, a locking ring adapted to be secured upon one side of said felly for engagement with the tire-holding rim, and a lug rigidly mounted upon said locking ring for insertion within said opening formed upon said felly, to confine said boss within the circumferential portion of said L-shaped slot.

974,251. Demountable Rim. Edmund Joseph Estey, Apponaug, R. I. Filed June 6, 1910. Serial No. 565,185.

1. The combination with the felly of a wheel, of a rim permanently secured upon said felly and provided with an edge curved in cross section, said felly being provided with a plurality of pockets, said rim being provided with a corresponding number of slots having communication with said pockets, a demountable rim provided with edges curved in cross section to hold a tire, said demountable rim being adapted to be removably arranged upon said first-named rim, a plurality of lugs connected with said demountable rim for insertion within said slots, each of said lugs having portions thereof under cut to lock with the walls of the slot, a ring to be detachably connected with said felly, and a plurality of keys rigidly mounted upon said ring for insertion within said pocket, to confine said lugs within one end of said slots.

974,281. Automobile Clutch and Brake Controlling Mechanism. Henry M. Kug-

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SPRINGFIELD METAL BODY COMPANY

206 Birde Avenue, Springfield, Mass.

ler and William T. Clark, Buffalo, N. Y. Filed May 20, 1909. Serial No. 497,374.

1. In an automobile brake mechanism, the combination with the engine cylinders and engine exhaust fluid controlling means; of an exhaust fluid reservoir, a check valve placed between said engine cylinders and said reservoir and a pressure reducing valve placed between said reservoir and said fluid controlling means.

974,313. Vehicle Spring Support. Emory D. Toors, Indianapolis, Ind., assignor of one-half to Charles B. Clarke, Indianapolis, Ind. Filed Jan. 31, 1910. Serial No. 541,003.

1. In a vehicle, the combination of a supporting axle and the main frame, of a spring secured at its middle to the axle and at one end to the main frame, a second spring connected at its middle to the free end of the first spring and connected at its ends to the main frame.

974,525. Starter for Hydrocarbon Engines. John B. Runner, Indianapolis, Ind., assignor to Leonard M. Quill and Louis A. Browne, Indianapolis, Ind. Filed June 20, 1910. Serial No. 567,968.

1. The combination, with an engine, of a shaft, a coupling for detachably connecting the engine and shaft, a sleeve mounted on the shaft, a ratchet wheel mounted on the sleeve, means for permitting rotation in only one direction of the sleeve on the shaft, a lever having a hub through which the shaft passes, an arm on the hub of the lever and means on the arm for drivingly engaging the ratchet wheel as the hub is rocked by the lever.

974,579. Vehicle Headlight Steering Gear. Arthur G. Lindley, Schenectady, N. Y., assignor of one-half to Thomas F. MacGregor, Schenectady, N. Y. Filed Dec. 4, 1909. Serial No. 531,321.

1. A vehicle headlight steering gear, comprising a lamp, a pivot post therefor, a bracket for said pivot post fixedly attached to the body structure of the vehicle to move therewith, a second pivot post, a bracket for said second post fixedly attached to the running gear of the vehicle to move with the axle thereof and arranged to dispose the said second post in line with the said first-mentioned post and directly at the rear thereof, means operatively connecting said pivot posts to rotate the same in unison, and means for connecting the pivot of the steering wheel with the second of said posts to rotate said pivot and said post in unison.

974,709. Shock Absorber. Charles F. Rodin, San Francisco, Cal. Filed Nov. 22, 1909. Serial No. 529,233.

The combination in a spring recoil compensator, of a plate adapted to be secured to the axle of a vehicle, said plate having a longitudinal segmental groove, a segmental casing having the axis of the groove its center of curvature, a shaft turnable in the groove, a channel formed in the lower part of the groove, a packing bar located in the channel and forming a joint with the surface of the shaft, a piston projecting radially from the shaft and having a packing joint between its edges and the interior of the segmental casing, means for oscillating the shaft and piston within the casing, valve-controlled passages by which liquid contained in the casing is allowed to pass freely from one side to the other of the piston, and return grooves formed in the inner surface of the casing, said grooves being gradually lengthened from one end to the other of the casing.



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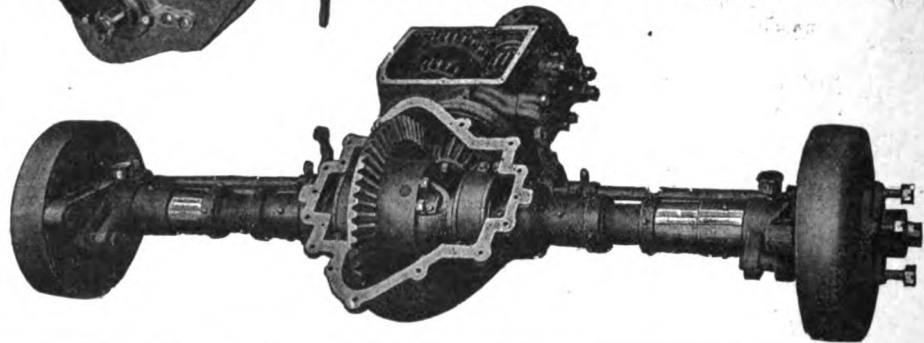
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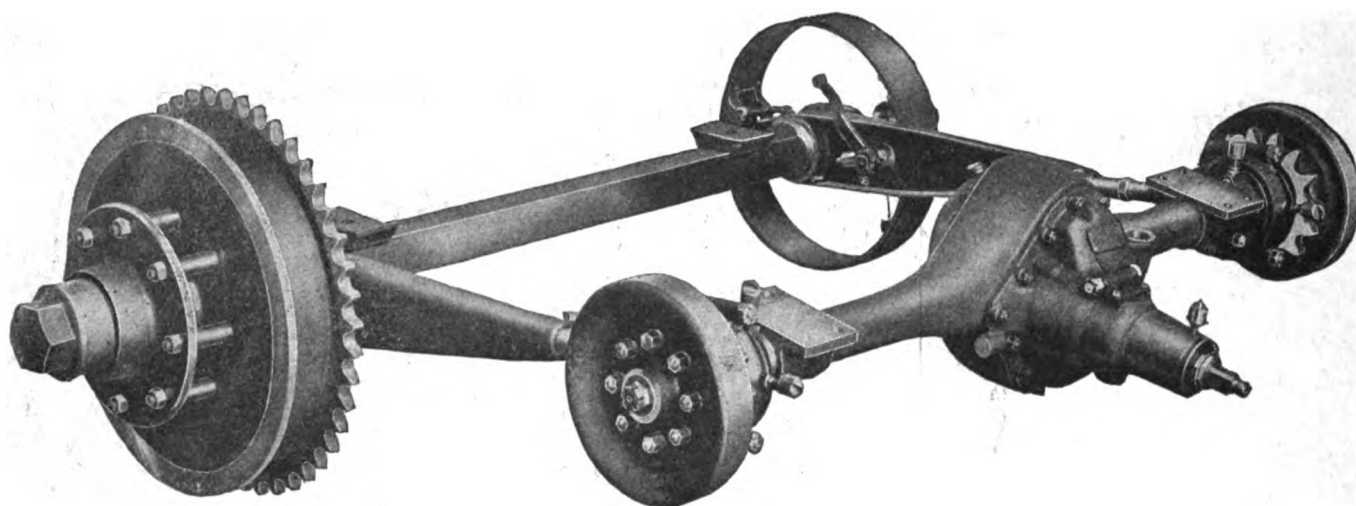
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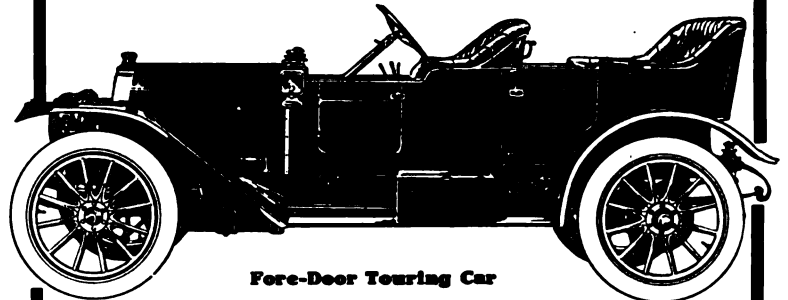
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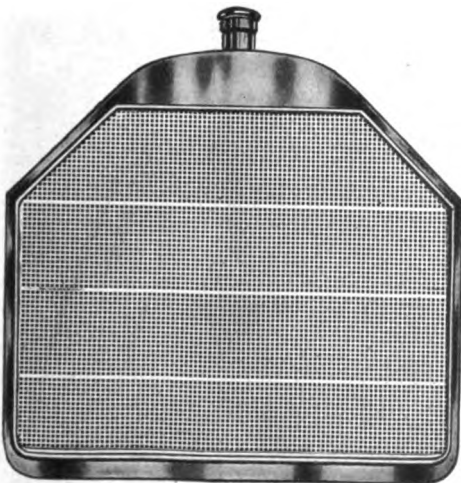
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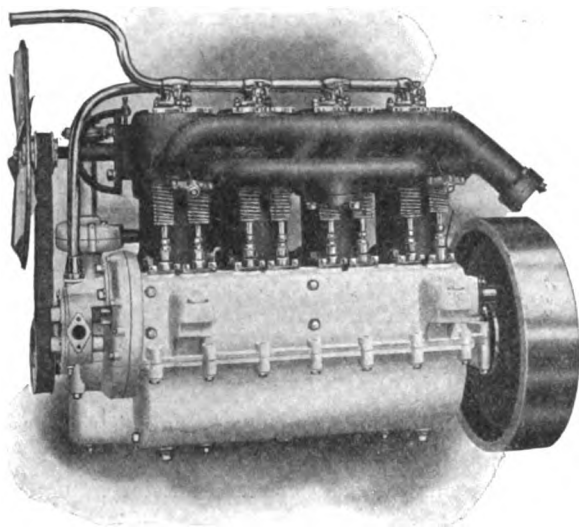
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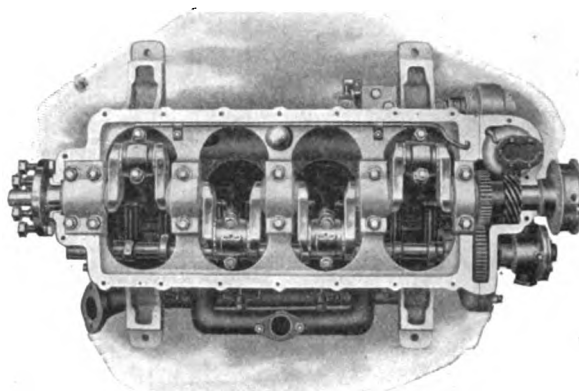
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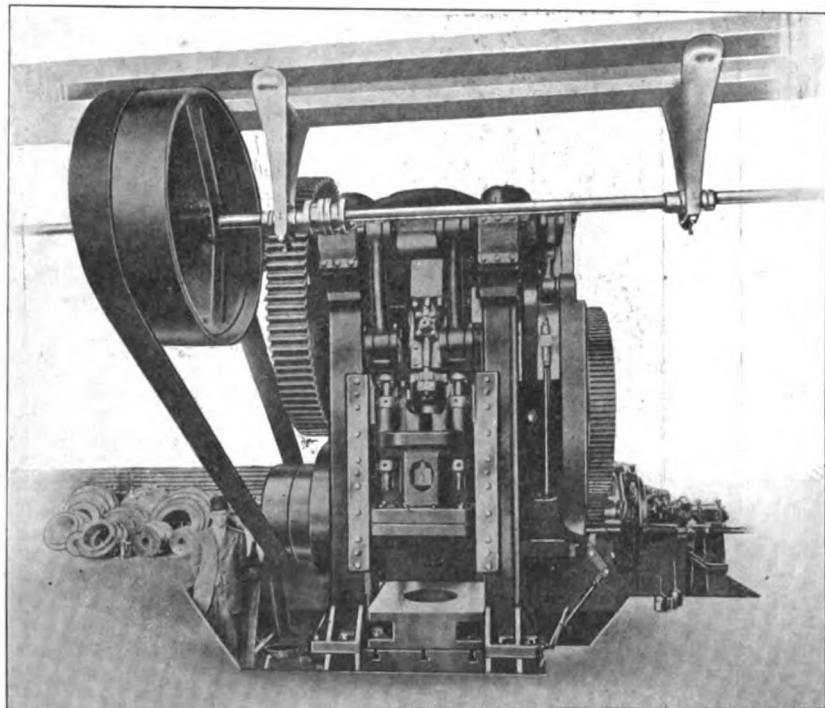
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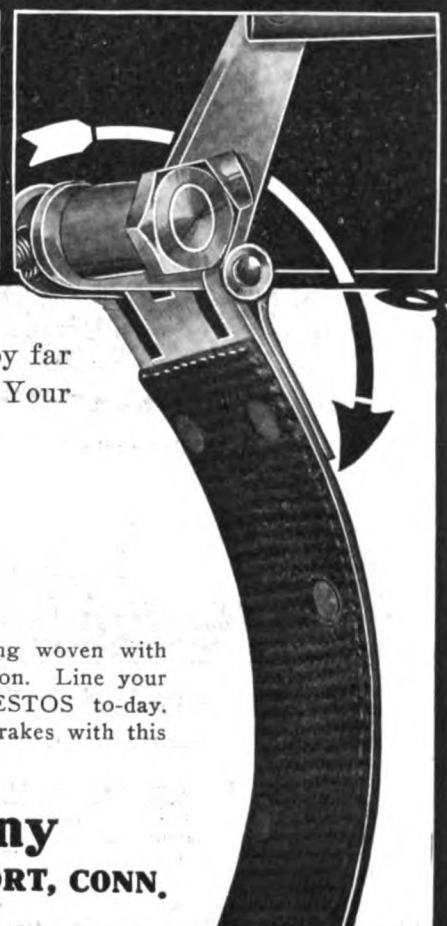
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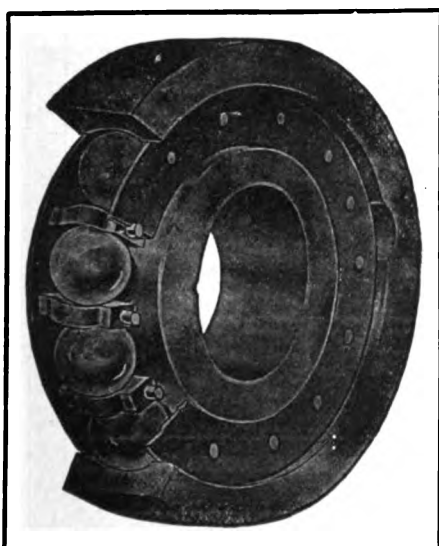
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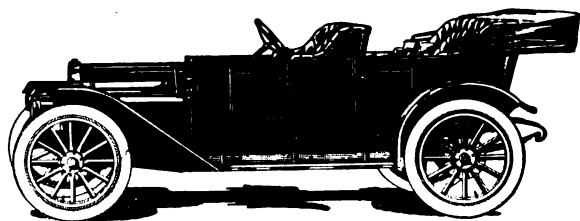
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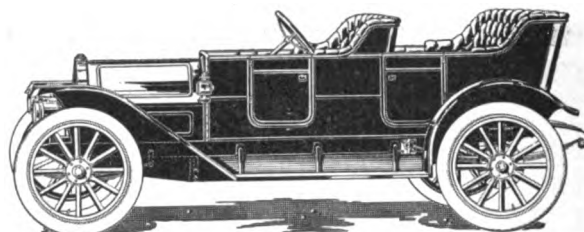
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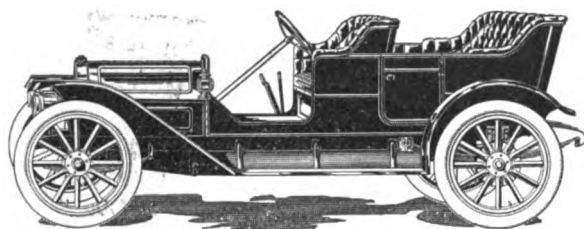
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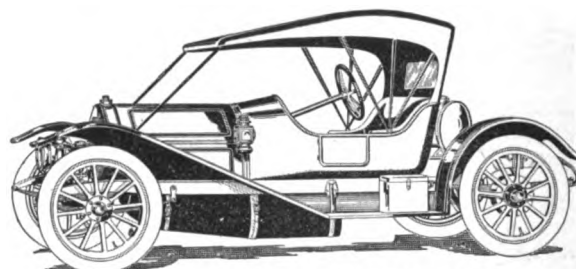
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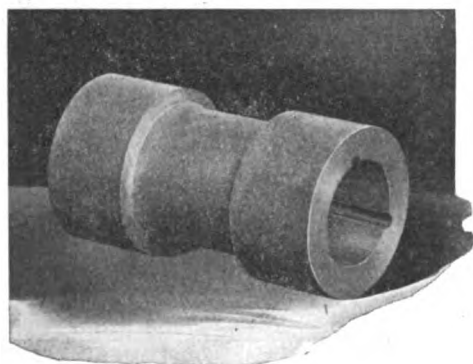
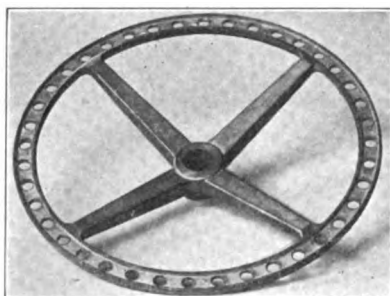
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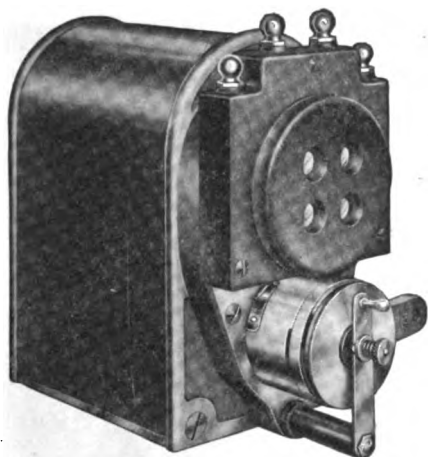
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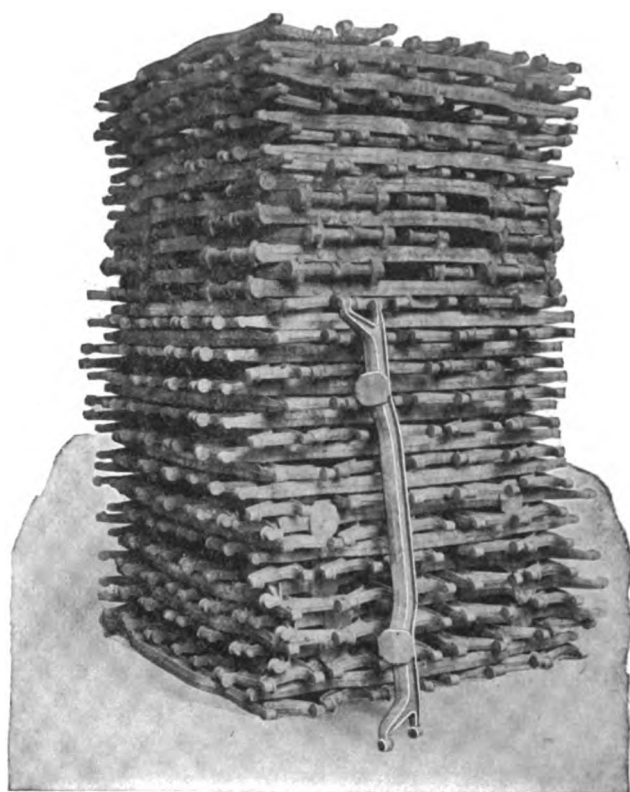
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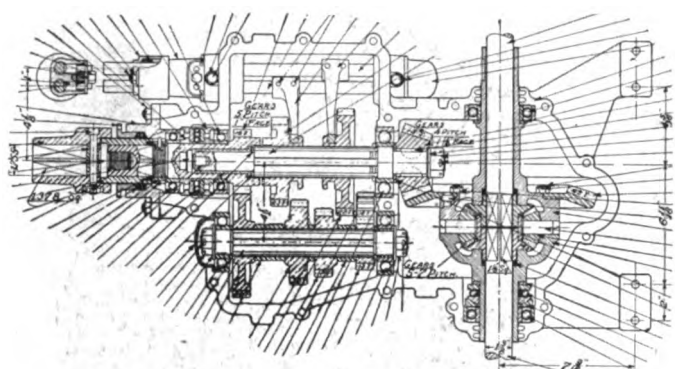
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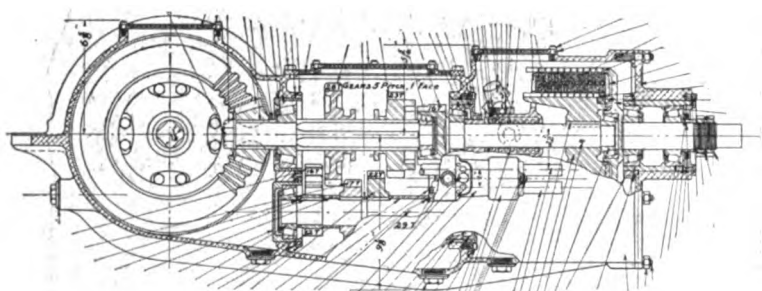
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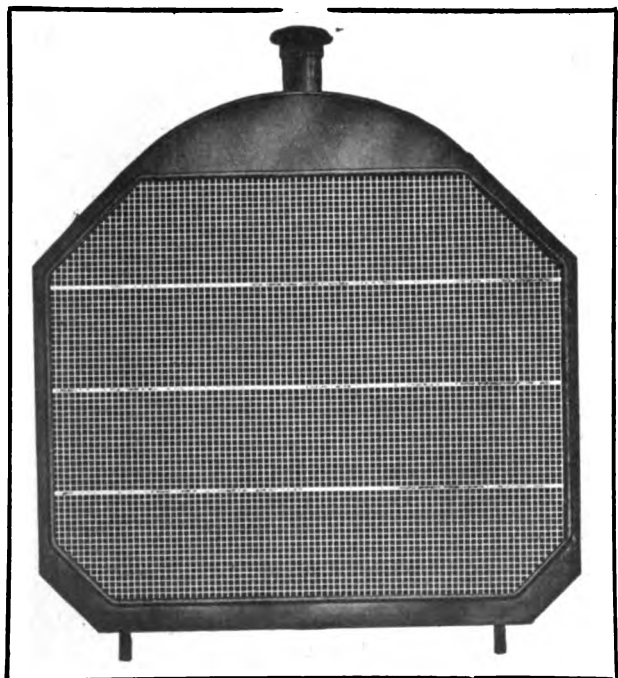
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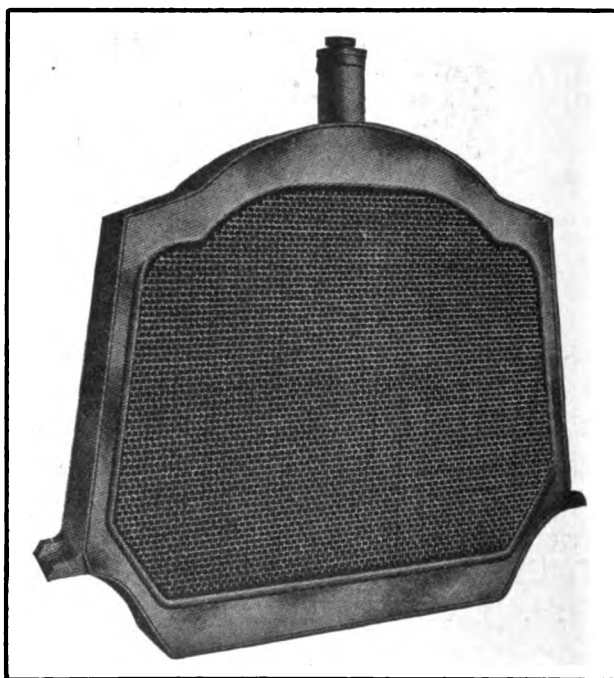
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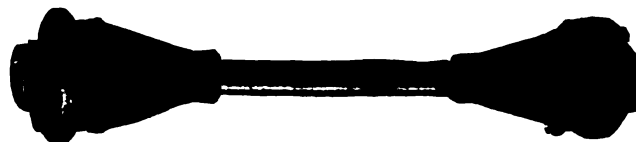
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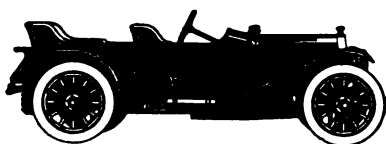
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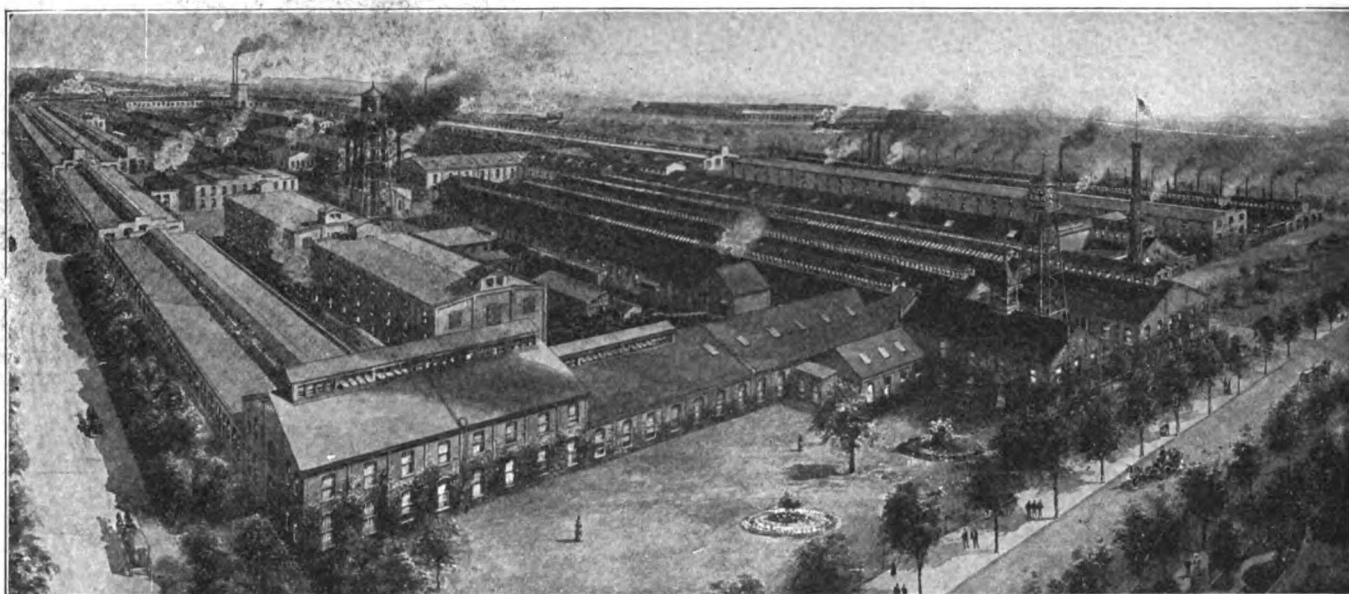
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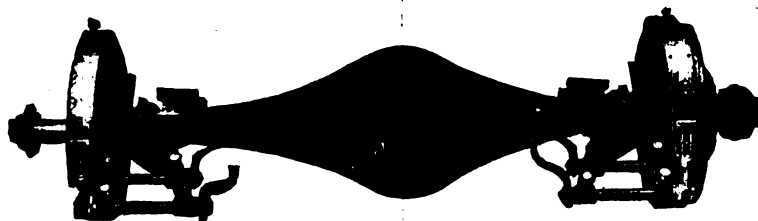
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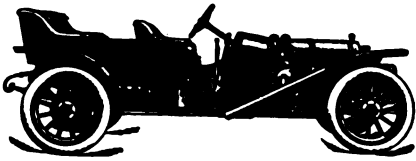
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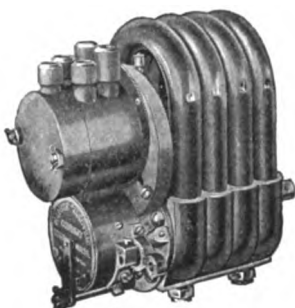
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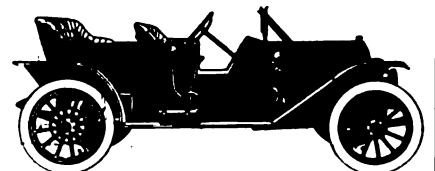
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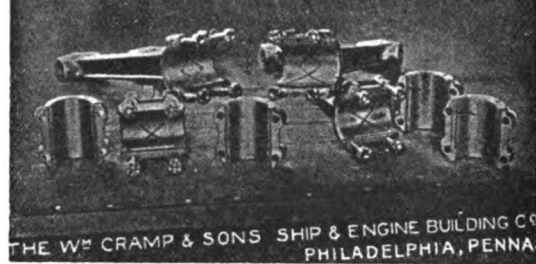
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THESE PARSONS WHITE BRASS BEARINGS RAN
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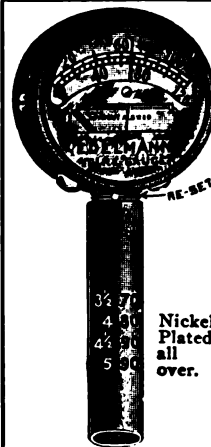


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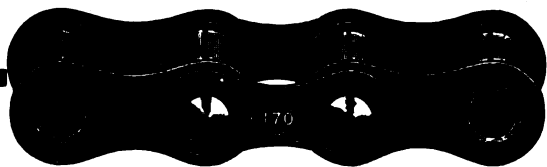
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Rub a little GLASSO on
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A clear vision is as necessary as a clear head. Don't
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Touring Type \$1650		35 H. P.
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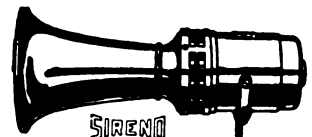
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40 HORSEPOWER—36 IN. WHEELS—112 IN. WHEELBASE

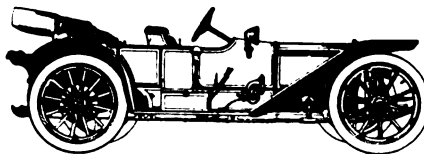
5-Passenger Touring Car, fully equipped,	\$1500
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"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading cities. Increased output this year offers a new opportunity to buyer and dealer alike.



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TRAVELER

Underlying
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wheels; 4 cyl.; 50
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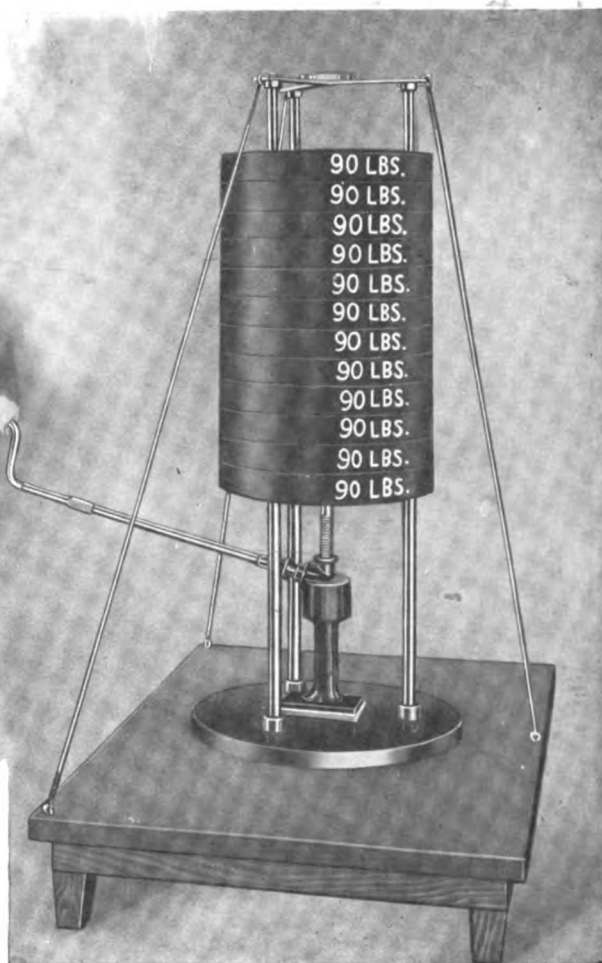
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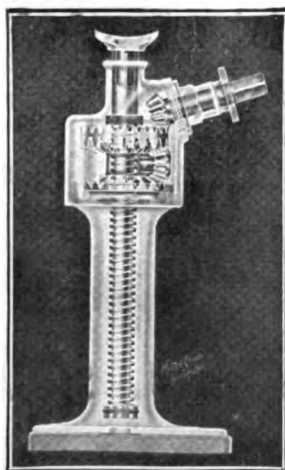
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AUTOMOBILE
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of a heavy car—with just
an easy swing of the handle.

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proved also those other *exclusive* advantages
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All parts solidly fitted; no
chance whatever of oil or
smut leakage. Height, over
all, 11¼ inches. Lift, 6 in.

Attractively finished in
black enamel and polished
nickel. Handles of polished
coca-bola wood. Ash base.
Made in Klaxon way—of
finest materials and perfect
workmanship.

THE jointed extension handle—
30 inches long—enables you
to set the Raiswell by means
of the handle, and to operate it from
a convenient, comfortable distance.
No need to crawl under your car
—ruining cap and clothes against
the fender; no need to kink your back
and bark your knuckles with awkward
pump-handle work; no danger of a
broken "jack" just when you need
it most. The Raiswell will earn its
first cost every year—in its saving of
clothes, time, temper, "jacks."

*Shipped, express prepaid, anywhere in the
United States on thirty days trial, upon
receipt of the regular price, \$10.00.*

Lovell-McConnell Mfg. Company

Makers of the

KLAXON

207 Wright Street

Newark, N. J.



THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

Licensed under Selden patent.

ON EXHIBITION CHICAGO SHOW

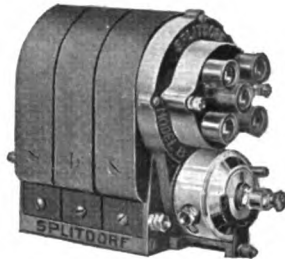
THE MOTOR WORLD

A trade paper giving the
World's Motor News

Ten cents a copy—
Two dollars a year



SPLITDORF VICTORIES



At the Los Angeles Meet

The National, driven by Merz, won the 10 and 25 mile events for cars having a displacement of 600 cubic inches and under.

Time: 10 miles, 7.23 2-5

Time: 25 miles, 19.56 2-5

Yes, the National was equipped with a

Splitdorf Magneto

which gave its usual Perfect Ignition.

C. F. SPLITDORF

Walton Ave. and 138th St,

Branch, 1679 Broadway

New York

The Last Word in Solid Motor Tire Construction

B R O U G H T O U T I N T H E

New Demontachable Tire and Rim

By The Hartford Rubber Works Co., Hartford, Conn.

The invention of C. B. Whittelsey, Superintendent

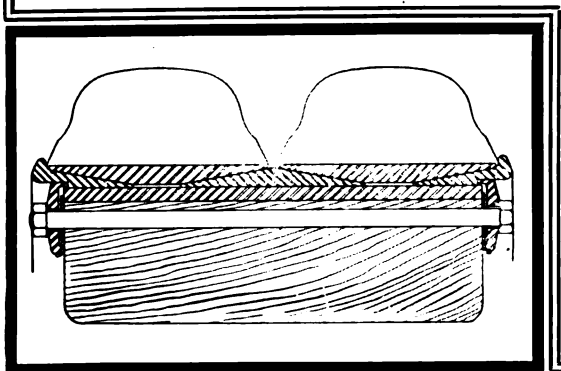
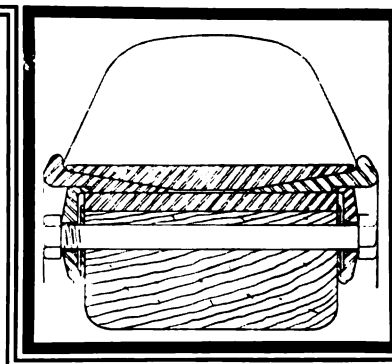
The Whittelsey Demontachable Tire and Rim enables you to effect a change of truck tires without removing wheel from the truck.

The only Rim yet produced which permits of this with both Single and Dual Tires.

It is simplicity itself, consisting of two split edge wedge rings which are held in position by eight small lugs, or twelve, according to size of wheel, fastened by bolts, which secure the wedge rings into positive position.

The rim can be operated equally well on the road or in your garage when used in conjunction with the Whittelsey Demontachable Solid Tire with special base to fit the rim. These rims and tires will fit any existing rim which is now equipped with side flange or side wire tires of any standard make.

Just think what this means to you who operate trucks. No more awkward and expensive delays caused by having to send wheels back to factory or branches to have new tires equipped. No need to carry wheels fully equipped in stock; just the tires themselves, and a spare tire on the truck means that tire trouble on the road can be taken care of at once.



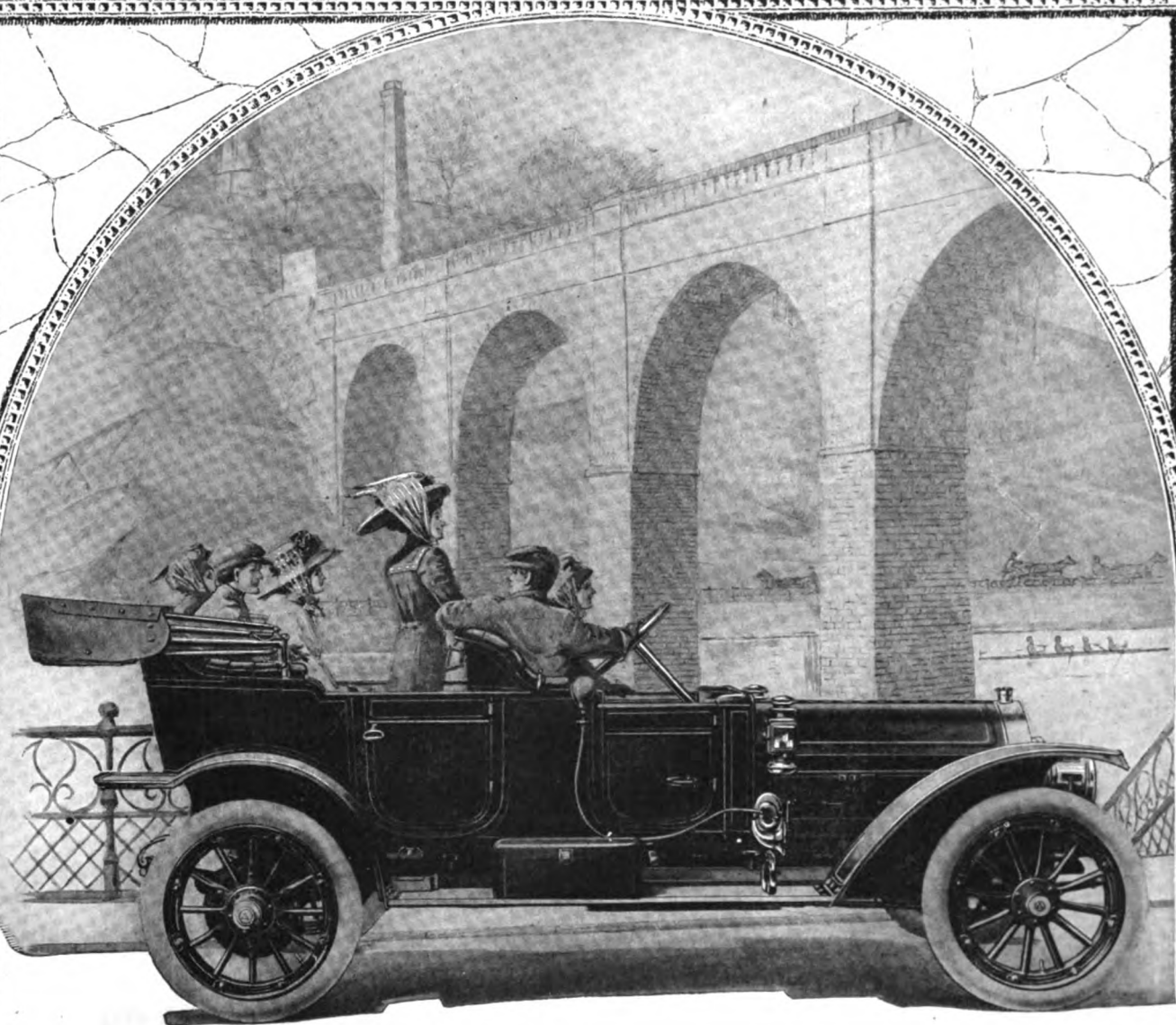
The Hartford Rubber Works Co.

H A R T F O R D , C O N N E C T I C U T

BRANCHES—New York, Chicago, Boston, Philadelphia, Buffalo, Detroit, Cleveland, Denver, Atlanta, Ga., Minneapolis, Kansas City, Mo., Dallas, Tex., St. Louis, Mo.

AGENCIES—Chanslor & Lyon Motor Supply Co., San Francisco, Cal., Los Angeles, Cal., Fresno, Cal., Seattle, Wash., Spokane, Wash., Portland, Ore.; F. P. Keenan Company, Portland, Ore.; Commercial Automobile Co., St. Louis, Mo.; Indianapolis Motor Car Co., Indianapolis, Ind.; Kilgore & Stiltz, Louisville, Ky.; Standard Auto Co., Pittsburgh, Pa.

Stevens-Duryea



What Is Your Ideal
of a Motor Car?

We will gladly tell you—
simply fill out this coupon.

STEVENS-DURYEA COMPANY, Chicopee Falls, Mass.
Gentlemen:—Kindly mail booklet No. 5.

Name
Street
City
State

Hupmobile

GUARANTEED FOR LIFE

You'll hear all sorts of things about the cars you see at the shows and on the streets.

But mark this: Everything you hear about the Hupmobile will be in praise of it. Because it has never yet disappointed an owner, unless he asked what would be impossible of any car.

Again, its history is dotted with feats which a heavier car, or one less

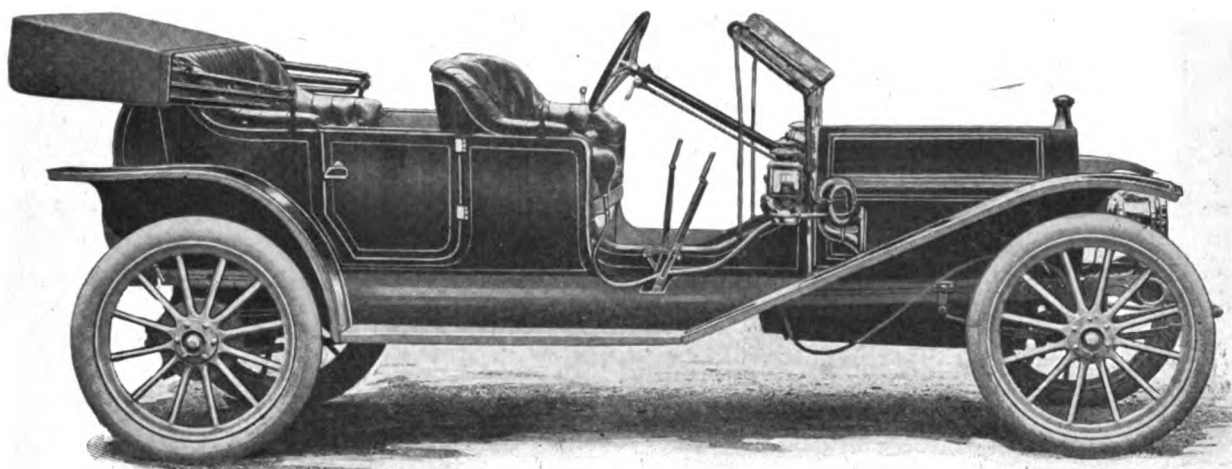
stoutly built, could not have accomplished.

It has made and is making thousands of friends because of its snappy grace of appearance;

Sturdy build;

Willingness and readiness for any road, at any time, for any distance;

And its remarkable economy of maintenance.



Touring Car—\$900

20 H. P., 4 cylinders; sliding gears; Bosch magneto; 110-inch wheelbase; 4 passenger. Price F. O. B. Detroit, including the following standard equipment: Gas lamps, piping and generator; 31 x 3½-inch rear tires; shock absorbers on front springs; three oil lamps, horn and tools. Top, windshield and speedometer extra.

Exhibit of the Complete Hupmobile Line at the Coliseum, Chicago, January 28th-February 4th.

HUPP MOTOR CAR COMPANY

Licensed under Selden patent.

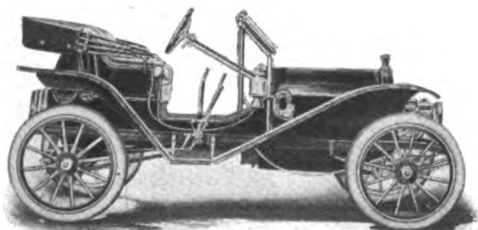
Dept. K DETROIT, MICH.

HUPMOBILE RUNABOUT

\$750 F. O. B. Detroit, including three oil lamps, tools and horn. Top, gas lamps, tank or generator, speedometer and trunk rack extra.

HUPMOBILE COUPE

\$1,100 F. O. B. Detroit. Equipment includes magneto; electric headlights, and interior overhead light; combination oil and electric dash and tail lamps; batteries and wiring; shock absorbers on front springs; single drop seat from dash; 31 x 3½ inch rear tires.





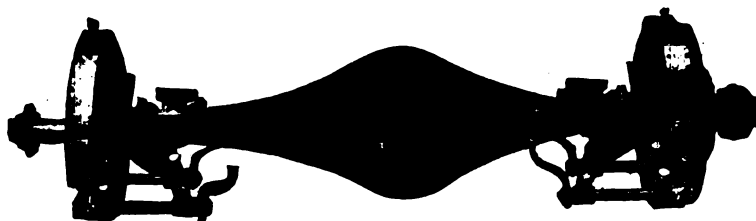
The Mayo—the radiator thoroughbred

¶ A definition of a quality car.

¶ Every other part as good as the Mayo—the Quality Radiator.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

STANDARD BEARINGS AND AXLES



STANDARD IN NAME, QUALITY AND DESIGN

Our Product is Used by 97 Per Cent. of American Motor Car Manufacturers

Standard Annular Ball Bearings

Standard Taper Roller Bearings

(Light, Medium and Heavy Series)

Standard Grooved Ball Thrust Bearings

Standard Journal Roller Bearings



Standard Annular Roller Bearings

Standard Ball Thrust Collar Bearings

Standard Roller Motor Bearings

“Standard Alloy” and
“High Buty” Steel Balls

See Our Exhibit, Space 4, Gallery, Coliseum Show, Chicago

STANDARD ROLLER BEARING COMPANY, Philadelphia, Pa.

HB

DWF

Y**ES, the Bearings are Hess-Brights**

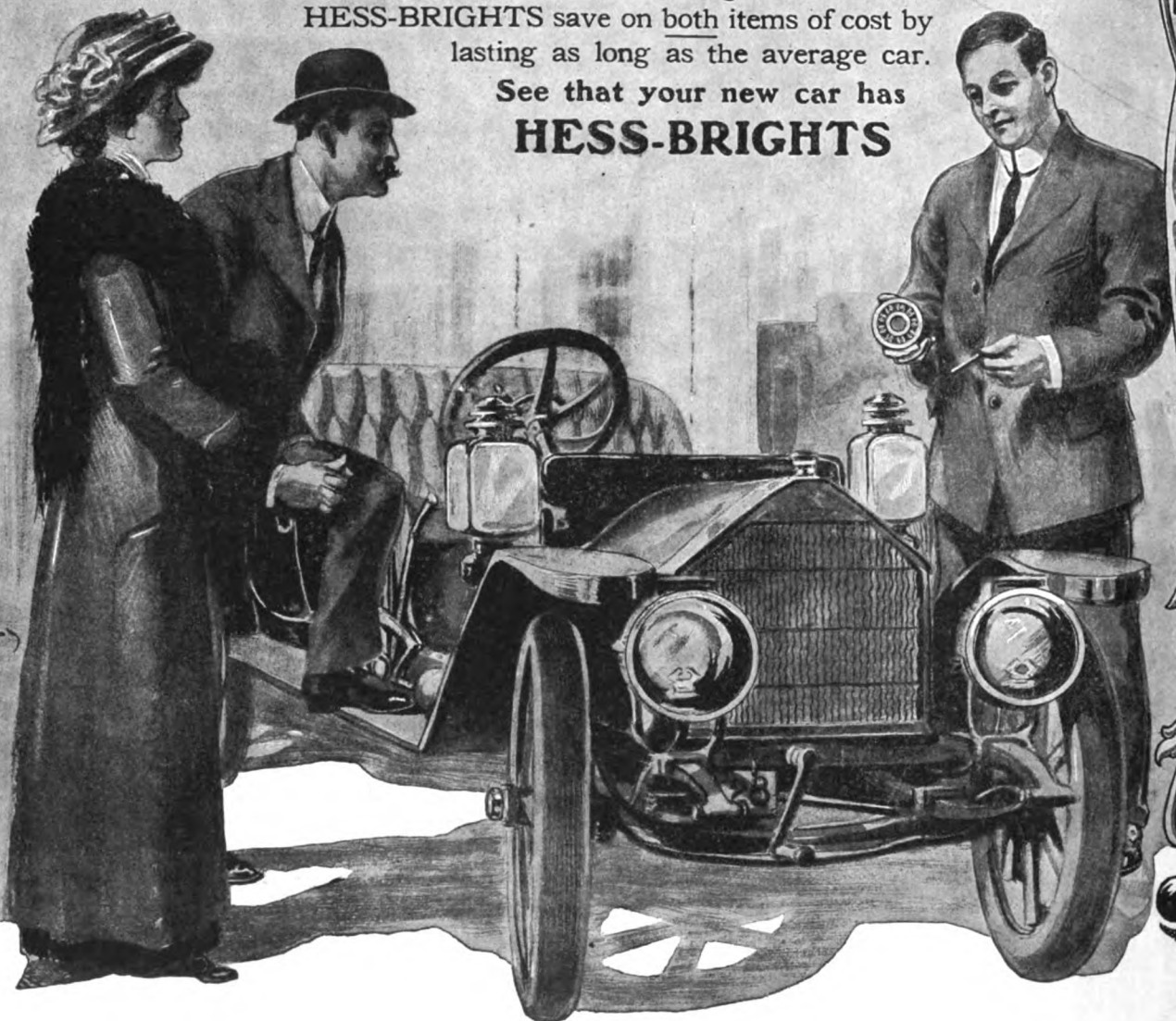
The careful purchaser of a car knows that no feature is more fraught with import to the expense account than the transmission and axle bearings.

Good bearings do more than keep themselves out of the repair shop; they prolong the life of related parts—notably the gears—by the perfect alignment they maintain.

The cost of overhauling is not simply the cost of new parts; it is also the much greater cost of taking down and reassembling.

HESS-BRIGHTS save on both items of cost by lasting as long as the average car.

See that your new car has
HESS-BRIGHTS



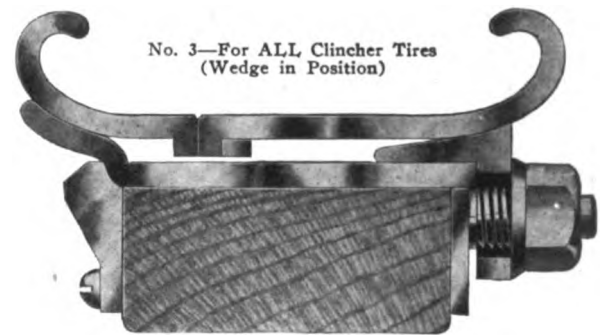
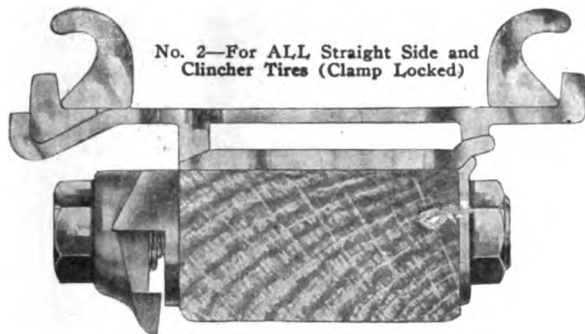
THE



HESS-BRIGHT

MANUFACTURING CO.

2109 Fairmount Avenue
PHILADELPHIA, PA.



STANDARDIZATION OF RIMS

that benefits

CAR BUILDERS—TIRE MAKERS—CAR OWNERS

The Standard Universal Quick Detachable Demountable Rims

“FIT ALL TIRES”

and

Solve the Problem of Interchangeability

25,000 sets of Demountable Rims and 135,000 sets of Quick Detachable Rims, practically 96 per cent. of the total number of Rims made in the United States, have been contracted for by the following manufacturers:

Acme Motor Car Co., The
American Locomotive Co.
American Motor Car Co.
Anderson Carriage Co.
Argo Electric Vehicle Co.
Ashland Auto Co.
Atlas Motor Car Co.
Atwood Auto Co.
Auburn Auto Co.
Austin Auto Co.
Auto Car Co.
Badger Motor Car Co.
Baker Motor Vehicle Co.
Bartholomew Co., The
Bergdoll, L. J., Motor Co.
Berbein Auto Co.
Broc Electric Carriage Co.
Buick Motor Co.
Burg, The L., Carriage Co.
Cadillac Motor Car Co.

Canada Cycle & Motor Co.
Carhartt Auto Corp.
Chalmers Motor Co.
Columbia Motor Car Co.
Cook Auto & Carriage Co.
Corbin Motor Vehicle Corp.
Cunningham, Jas. Son & Co.
Davis, Geo. W., Carriage Co.
Dayton Motor Car Co.
Dietrich Motor Car Co.
E-M-F Co.
Ellis Motor Car Co.
Elmore Mfg. Co.
Fiat Auto Co.
Franklin, H. H., Mfg. Co.
G & J Tire Co.
Gabriel Auto Co.
Garford Co., The
Gramm Motor Car Co.
Great Southern Auto Co.

Grout Auto Co.
Hartford Rubber Works Co.
Hayes Wheel Co.
Hol Tan Co.
Hudson Motor Car Co.
Imperial Wheel Co.
International Harvester Co.
Inter-State Auto Co.
Jeffery, Thos. B., Co.
Johnson Service Co.
Kissel Motor Car Co.
Lexington Motor Car Co.
Locomobile Co.
Lozier Motor Car Co.
Louverne Auto Co.
McFarlan Motor Car Co.
McLaughlin Motor Car Co.
Mann-Aldrich Carriage Co.
Marion Motor Co.
Maxwell-Briscoe Motor Co.

Michigan Buggy Co.
Middleby Auto Co.
Mitchell-Lewis Motor Co.
Moline Auto Co.
Moon Motor Car Co.
Moyer, H. A.
Morgan & Wright
National Motor Vehicle Co.
Nordyke & Marmon Co.
Oakland Motor Car Co.
Olds Motor Works
Overholt Co.
Packard Motor Car Co.
Paterson, W. A., & Co.
Peerless Motor Car Co.
Pierce-Arrow Motor Car Co.
Pence Auto Co.
Pope Mfg. Co.
Premier Motor Mfg. Co.
Prudden & Co.

Pullman Motor Car Co.
Rauch & Lang Carriage Co.
Richmond Iron Works Corp.
Schacht Motor Co.
Selden Motor Vehicle Co.
Simplex Auto Co.
Stanley Motor Carriage Co.
Stearns, F. B., Co.
Stevens-Duryea Co.
Streater Motor Car Co.
Studebaker Auto Co.
Thomas, The E. R., Motor Co.
Traveller Auto Co.
Vellie Motor Vehicle Co.
Waverley Co., The
Westcott Motor Car Co.
White Co., The
Willys-Overland Co.
Winton Motor Carriage Co.



Write for illustrated
descriptive matter.

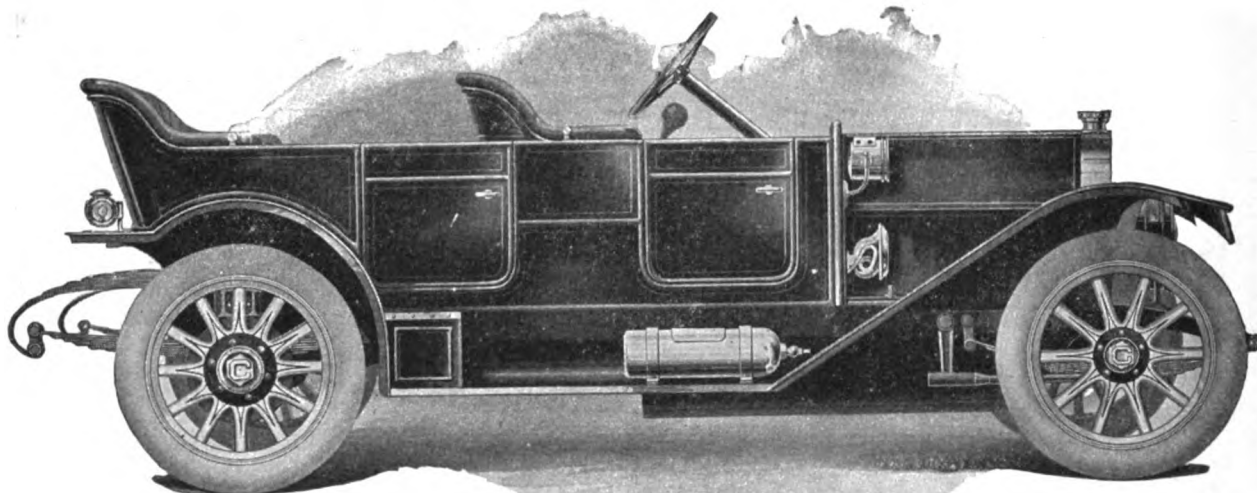
**The
United Rim
Company**
AKRON, OHIO

8 DEMONSTRATIONS
CHICAGO SHOW



THE COLBY \$1750

Built to Compete with \$3000 Machines



SPECIFICATIONS

Body: Standard touring straight line. Seating capacity, five. Fore-doors.

Motor: Four Cylinder—H. P., 35-40. Bore, 4 $\frac{1}{4}$; stroke, 5 $\frac{3}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.

Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.

Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system.

Carburation: Carburetor—special fuel feed—gravity.

Clutch: Type—multiple disc. Friction surfaces—steel to steel.

Gearset: Selective—located amidship. Three speeds forward.

Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.

Bearings: Crankshaft—three large, plain. Camshaft—three, plain. Clutch—spindle, plain. Clutch—thrust, ball. Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball. Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white brass.

Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36x4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type. Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.

Demountable Rims:

Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.

Control: Hand levers on steering wheel and foot accelerator.

Price: \$1,750, f. o. b. Mason City.

Vital Points of Real Superiority

Big and powerful in appearance, real 1911 fore-door body (not 1910 body with fore-doors added), long, straight lines—superior finishing and equipment.

Big power back of the appearance. 40 full horsepower—enough to take you anywhere, over any country, in any weather, without strain to yourself or your car.

Extra long wheelbase—121 inches—insuring the maximum of roominess and easy-riding qualities.

Big wheels with 36-4 inch tires—a further guarantee of easy-riding and reduced cost of maintenance.

Demountable Rims—if you knew what a wonderful convenience these were, you wouldn't consider the ordinary kind on your car.

A price that marks a revolution in car values—\$1750.

These, in addition to marked superiority of design, material and workmanship, take the Colby entirely out of the field of competition, either with other cars of its price, which cannot approach it in quality, or other cars of its quality, which are *never* sold at its price.

Our 1911 output is limited. We therefore advise an early investigation and reservation of territory.

Watch for us in the Coliseum basement—Booth No. 3—at Chicago from January 28 to February 11.

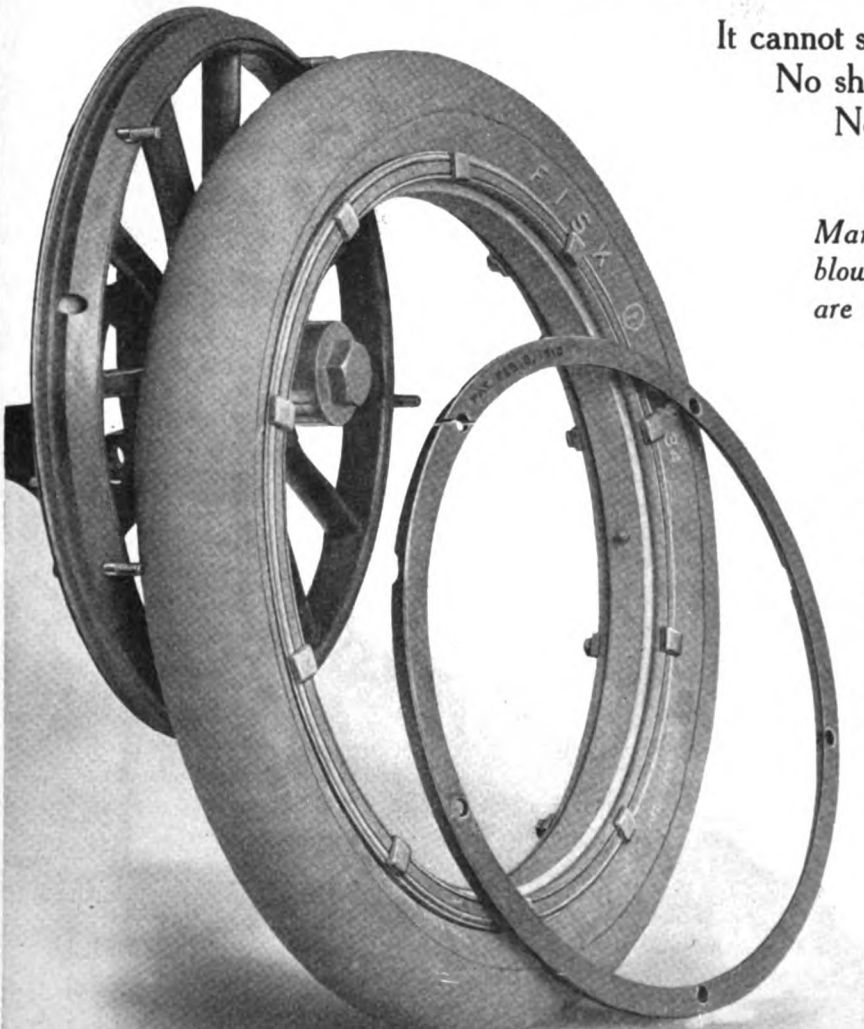
COLBY MOTOR COMPANY, Mason City, Iowa

New York Representative—EMPIRE CITY AUTOMOBILE CO., 1800 Broadway.

All Demountable Rims are Successes in Print
 All Demountable Rims are Reasonably Quick Sometimes

THE FISK REMOVABLE RIM

In Actual Service is Always Quick — Always Safe



It cannot stick because of rust or mud.

No short staybolts.

No excessive weight.

No special tools required.

*Mark this: A tire cannot
 blow off this rim, and there
 are no loose rings to fly off.*

The FISK Rim was the pioneer Demountable for general use. With details perfected it is the same rim exhibited three years ago. An immediate success, it is and always has been the only altogether practical rim on the market.

*Investigate and Compare Before
 You Order Tire Equipment.
 Exhibiting at Chicago Show,
 January 28 to February 11.*

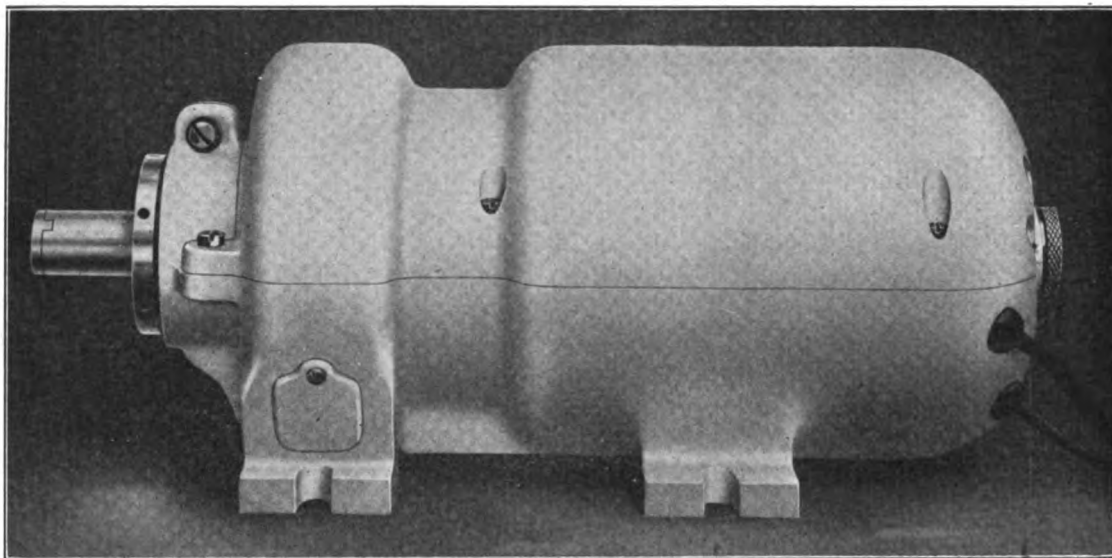
**The Fisk
 Rubber Co.**

Department 23
 Chicopee Falls, Mass.

*Twenty-three Direct Factory
 Branch Houses*

"REMOVE FIVE NUTS—
 THAT IS ALL"

Why not accept now what you will
probably insist on having later?



DYNAMO SYSTEM TYPE "C"

One-half life size. Weight complete, as shown, 19½ lbs.

GRAY & DAVIS Dynamo System of electric lighting of automobiles is just as dependable as electricity for your home and just as superior to other forms of lighting. Readily finding placement on all modern machines, driven by gears, chain or belt, Gray & Davis Dynamo System positively provides perfect efficiency in lighting and adds a necessary touch of luxury to present day motoring. The operation of the Gray & Davis Dynamo System is extremely interesting. Let us tell you about it in detail.

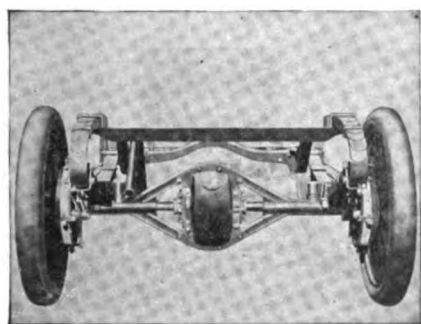
GRAY & DAVIS, Amesbury, Mass.

Manufacturers of High Grade Automobile Lamps

Stearns Type of Rear Axle Construction A Leading Feature of the Paris Show

¶ Below is given a description of the Renault rear axle, exhibited at the 1911 Paris Show, and an excerpt from the 1909 Stearns catalog.

¶ It is indicative of the trend of axle design that Louis Renault, who has perhaps designed and built more shaft drive rear axles than any other man in the world,



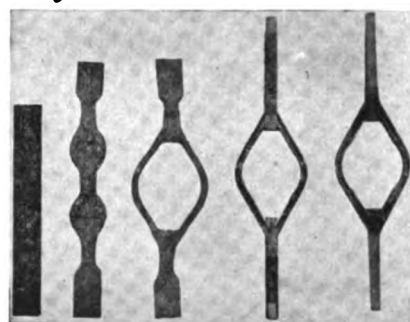
Stearns Rear Axle Construction

(Horseless Age, December 21, 1910)
Resume of Paris Show.

"Almost the only firm that can be said to have reserved a new design for the current show is Renault, who brings forward a novel rear axle, which will be fitted to the various powered types; the sleeves, from end to end, are formed from a single forging, joined in the center at top and bottom by circular bridges to which are bolted the two halves of the differential casing. The forging is bored out to take the axle shafts, and, of course, makes a most substantial job, that will always keep the shafts in line and never sag. * * * * The torque tube completely encloses the propeller shaft, * * * * *"

and who was one of the first to use a shaft drive, should adopt as his latest design the solid one-piece forged construction for the rear axle. It proves also that the finest arrangement, workmanship and material cannot make a built-up axle perfectly satisfactory.

¶ Years of experience with solid axles on chain drive cars convinced the Stearns engineers **THREE YEARS AGO** of the need of such an axle for shaft drive models, and the shaft drive Stearns has always utilized this construction.



(Solid Steel Blank) How the Stearns Rear Axle is Forged from One Solid Piece of Alloy Steel (Finished Axle)

(Stearns Catalog, issued March, '09)

"The drive is from the transmission by a propeller shaft and one universal joint through a combined torsion and radius tube to a cast case enclosing the differential gears. The rear axle is a solid steel forging of our own special design, the axle forging being bored from the solid to take the floating shafts, which drive from the square end at the differential to the flange jaw on the outer end of the hub. This form of axle has attracted much favorable attention from automobile engineers. It absolutely does away with all the objection heretofore advanced against the shaft drive rear axle. * * * * It is far superior to any "built-up" type of rear axle construction. It gives a solidity and reliability in rear axles only equalled by the solid axles of our chain-driven models."

30-60 H. P.
Model
Shaft or
Chain Drive

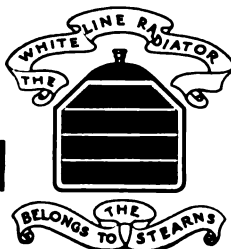
The F. B. Stearns Company

(Licensed under Selden Patent)

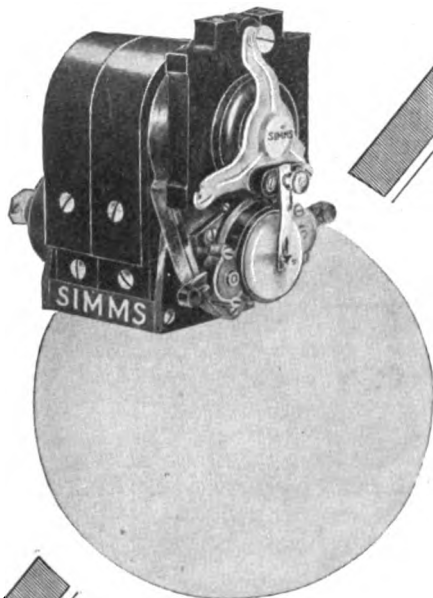
Cleveland, Ohio

15-30 H. P.
Model
Shaft
Drive

Pacific Coast Distributing Office
1651 Van Ness Ave., San Francisco



Dealers and Branches in all
Principal Towns and Cities



SIMMS MAGNETOS

**Get a SIMMS MOTOR STARTER
and Stop Cranking.**

“CRANKING up” is always troublesome
and dangerous.

NO cranking is necessary with the Simms
Motor Starter and there is no trouble—
no danger; therefore the pleasure of motor-
ing is increased.

STARTS the motor from the dash by a
partial turn of the switch. Its action is
positive and the driver does not have to move
from his seat.

NOT a complicated system of dual igni-
tion.



Write for full particulars.

*See our exhibit at Chicago
Show, January 28 to Febru-
ary 11. Stand 127 and 21.*

THE SIMMS MAGNETO CO.
1780 BROADWAY, NEW YORK CITY

London Representative:
Simms Magneto Co., Ltd.

Paris Representative:
Cie des Magnetos Simms.

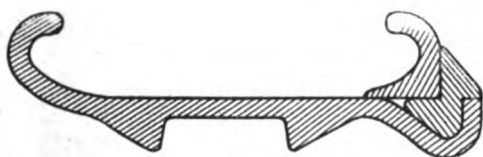
No Split Base in This Rim

Because water and rust ruin the casing and tube, the Firestone Demountable Rim is made with an unbroken base. Experience shows that rims which separate into halves, or split across the base, let water into the tire.

The Firestone rim is designed from the standpoint of the *tire* maker. It saves *tires* as well as *time* and *effort* in changing them. We avoid show-room display propositions in favor of results in *actual service*. This explains why America's leading car makers use and *recommend*

"Firestone"

Quick-Detachable DEMOUNTABLE RIMS



*The base of this rim is not split
either across the rim or around it.*

In line with established practice, even the valve hole is protected against the entrance of water, by a leather washer. The Firestone quick detachable feature holds the tire on safely, without bothersome short lugs. Its locking ring provides the strongest safety lock known to mechanics. Another Firestone feature permits tire changes without even demounting rim from wheel.

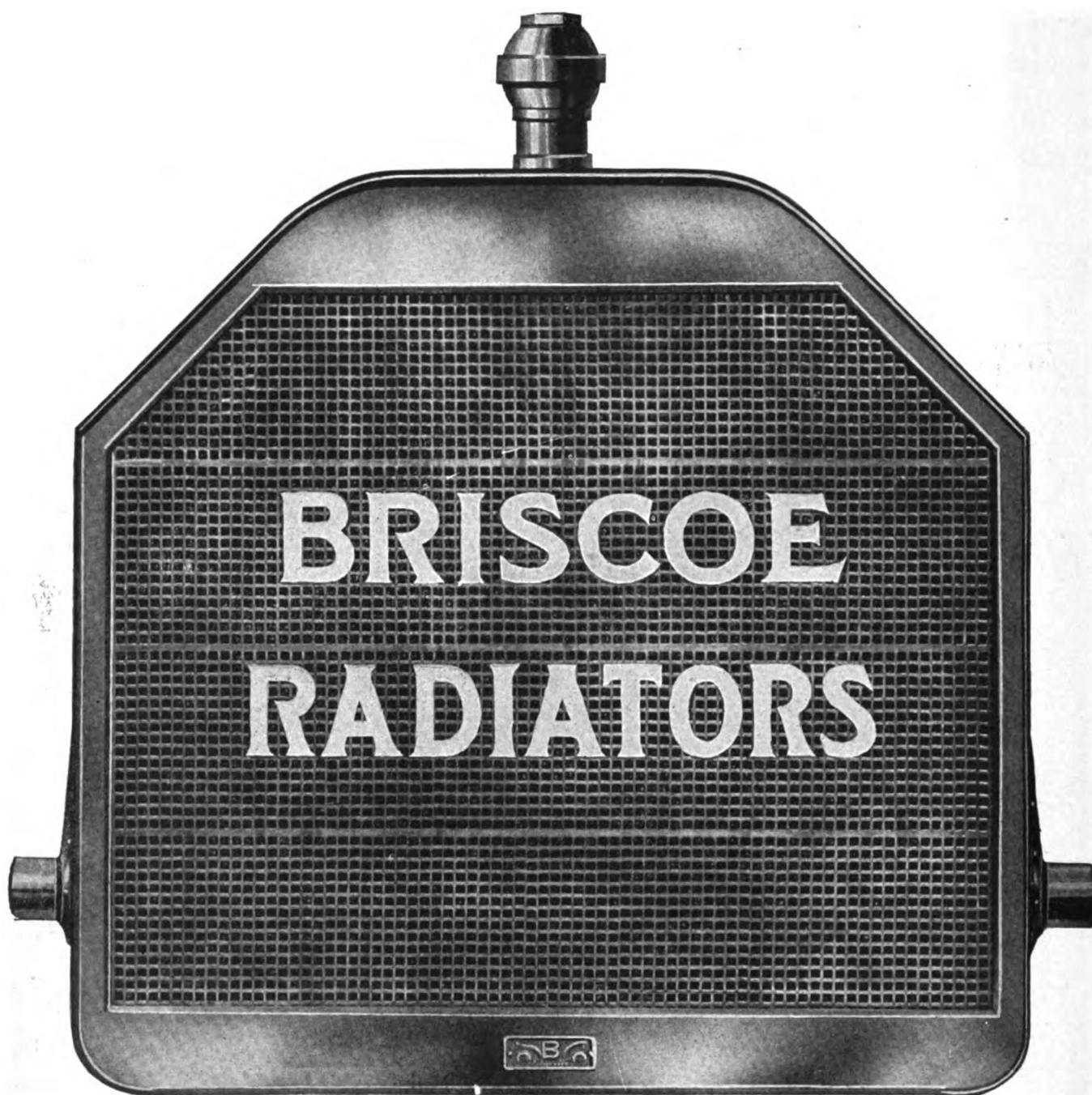
Specify Firestone Tires and Demountable Rims on your new car and cut down tire troubles from the start. Equip your present car RIGHT NOW with Firestone Demountable Rims putting Non-Skids on the rear and saving your used tires for spares.

The Firestone Tire & Rubber Co.

AKRON, OHIO, and all Principal Cities

"America's largest exclusive tire and rim makers"





BRISCOE PRODUCTS

RADIATORS
HOODS
FENDERS

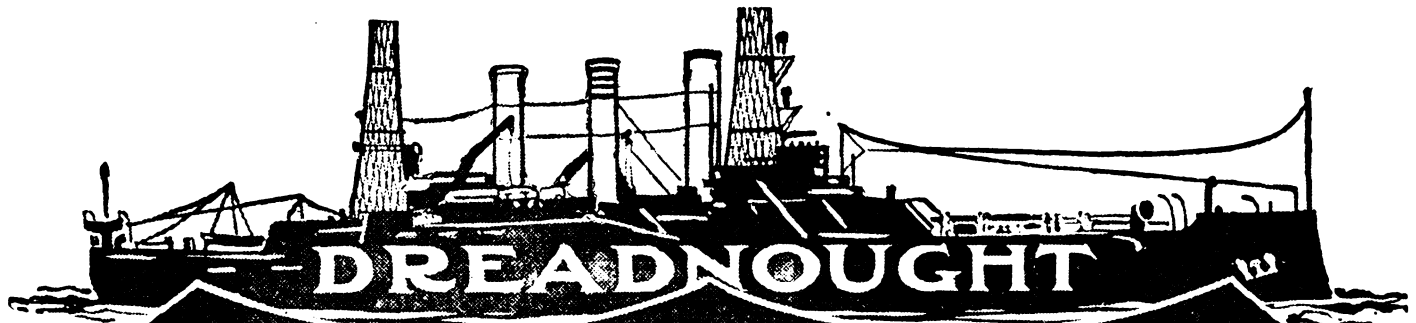
TANKS
DASHES
MUFFLERS

TUBE BENDING
SHEET METAL PARTS
STAMPINGS

DIES
GALVANIZING
ENAMELING

Let us make you a proposition on your next lot of SHEET METAL PARTS. We can interest you.

BRISCOE MANUFACTURING COMPANY, Detroit, Mich.



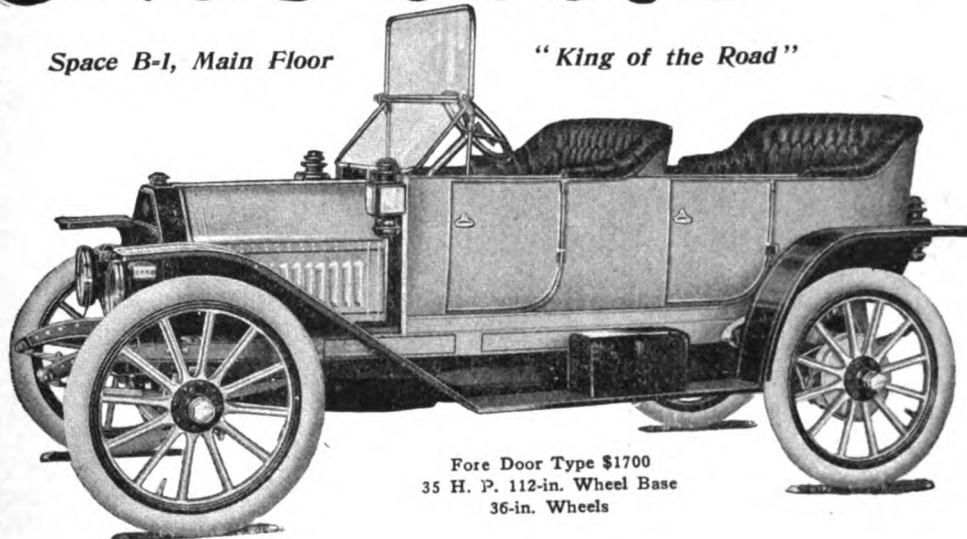
WE WILL EXHIBIT AT THE CHICAGO SHOW

January 28 to February 4, Three 1911 Models of the Dreadnought

Moline "35"

Space B-1, Main Floor

"King of the Road"



Fore Door Type \$1700
35 H. P. 112-in. Wheel Base
36-in. Wheels

All models equipped with our famous 4 x 6

Long Stroke Motor

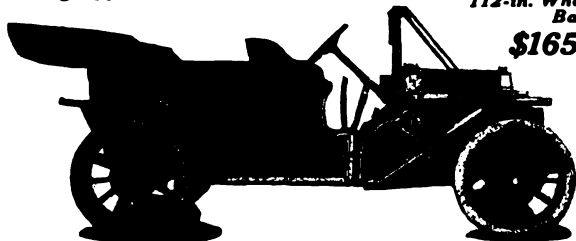
The sensation of the year which enabled the Moline to win out in the two most important reliability events of the season—outpointing every other car in the Glidden Tour and winning the Chi-

cago Trophy, also winning both the Team Trophy and tying for the Van Sicklen Cup in the 1000 Mile Chicago Reliability Run. See the 1911 Molines at the show or send for new Catalog No. 61.

Moline Automobile Company, 61 Keokuk St., E. Moline, Ill.

Touring Type, 5 Passenger

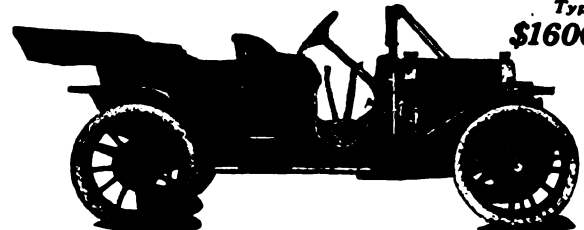
4 Cylinder, 35 H. P.
112-in. Wheel Base
\$1650



Dealers
Write
for
Territory
and
Terms

Toy Tonneau, 4 Passenger

Same Chassis
as Touring
Type
\$1600



Front and Rear Axles—for Light and Heavy Cars

We place at the car builder's disposal not only products of the highest quality and reputation, but matchless manufacturing facilities, years of experience and good, old-fashioned honesty in manufacturing, and the ability to deliver as scheduled.

The Lewis and American companies build rear axles on individual or stock designs—and you can bank on it that better axles are not to be bought, because they aren't made.

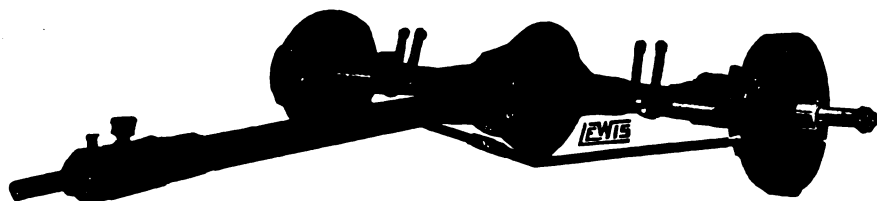
Front axles are drop forged.

AMERICAN DISTRIBUTING CO., 1030 S. Park St., Jackson, Michigan

SALES AGENTS FOR

The Lewis Spring & Axle Co.,
Jackson, Mich.

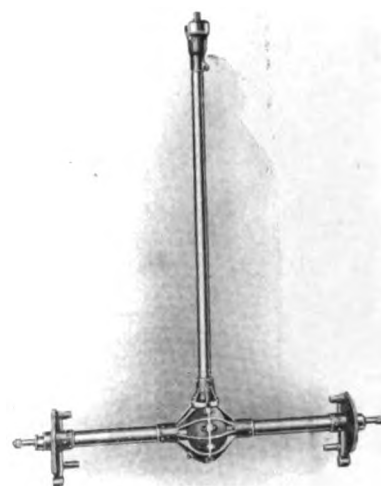
American Gear & Manufacturing Co.,
Jackson, Mich.



No. 8 Rear Axle—One of several Lewis models, each beyond comparison for quality.



No. 4 Front Axle—Four models, covering all requirements.



American Gear & Mfg. Co.'s Rear Axle
for light cars.

Transmissions, Pressed Metal Parts and Wheels—for All Types

The five companies represented on these pages are making parts for some of America's finest and sturdiest cars—that is how they stand in the industry.

Frost gears are noted for the accuracy of their cutting, their hardness and strength and their long life.

Sparks-Withington pressed metal parts are fit for the costliest cars made—and are found in many.

Hayes wheels are used by the most exacting pleasure and commercial car builders in the country.

All the products here represented are marketed exclusively through us.

AMERICAN DISTRIBUTING COMPANY

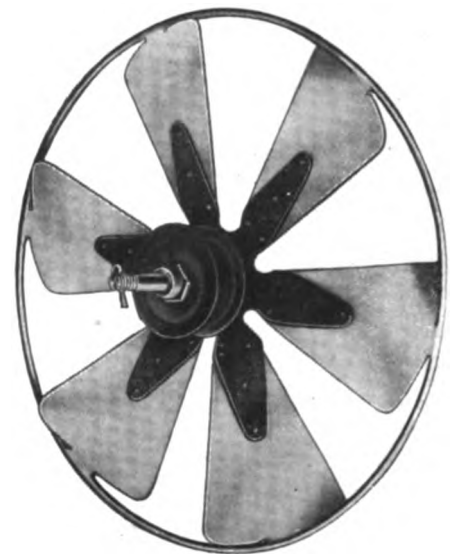
1030 S. Park Street, Jackson, Michigan

SALES AGENTS FOR

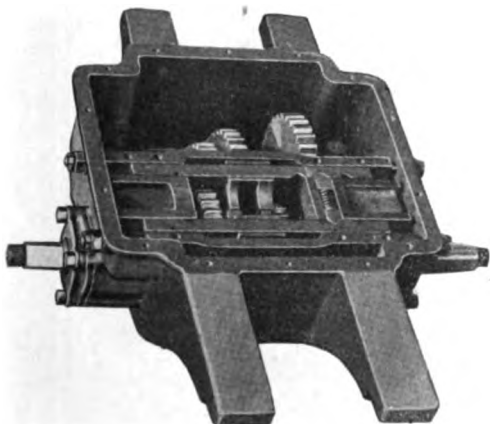
Frost Gear & Machine Co.,
Jackson, Mich.

Hayes Wheel Co.,
Jackson, Mich.

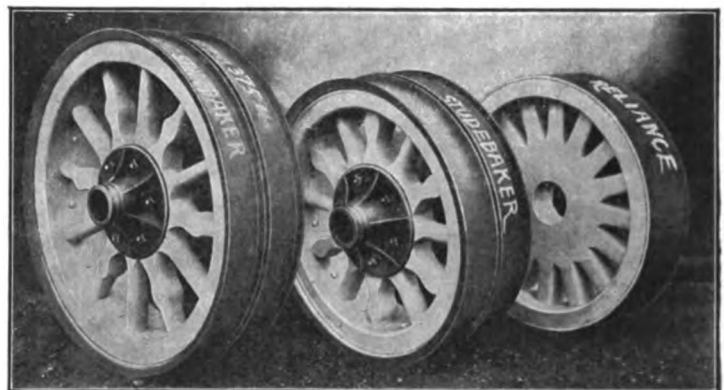
Sparks-Withington,
Jackson, Mich.



One of the Sparks-Withington numerous products in pressed metal.



New Frost Plain Bearing Sliding Gear, Selective Type Transmission. Quadrant in shifter slide cover removed. Three speeds and reverse.



Several types of Hayes Wheels for heavy trucks. All types for pleasure cars also produced.



WE have completed our annual arrangements for increase of business. Our equipment in all departments is very complete. We will exhibit our

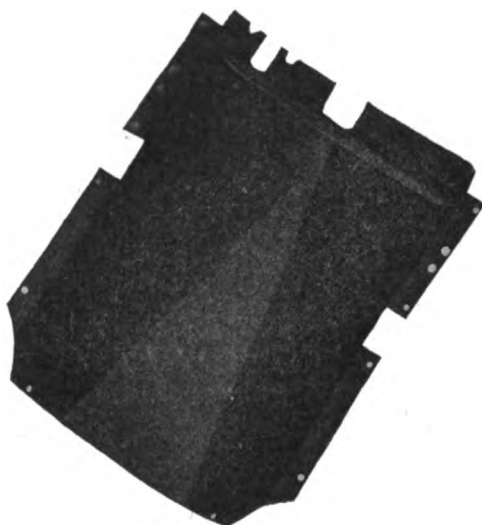
**New Channeled Steel Fender Stiffener
and the Hayes-Stanwood Running Board**

Metal Bodies

Fenders

Gasoline Tanks

Hoods



Engine Pans

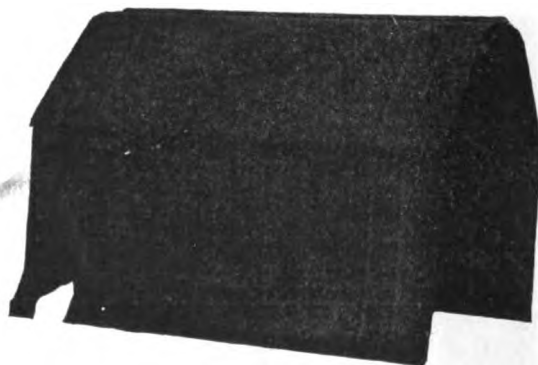
**Running Board
Shields**

**Forged Irons
Tool Boxes**

and a **FULL LINE OF SHEET METAL PARTS** at the Chicago Show. Don't miss seeing them.



**HAYES
M'F'G
CO.
Detroit,
Mich.**



THERE IS CLASS

in every detail of the

New Stewart
Speedometer

That is the reason
why so many fac-
tories and dealers
are adopting them
exclusively.

They are making friends
everywhere by making good.

Ask Your Dealer — Send for New Catalog

Stewart & Clark Manufacturing Company

1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
New York: 1878 Broadway
Chicago: 1312 Michigan Avenue



Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years

San Francisco: 307 Golden Gate Avenue
Los Angeles: 1212 South Main Street
Philadelphia: 608-10 North Broad Street

Those car manufacturers, who place the satisfaction and convenience of their customers above every other consideration, including price, use as

Regular or Partial Equipment

Continental

Acme

Alco

American

Amplex

Austin

Benz

Bergdoll

Cadillac

Chadwick

Columbia

Diamond

Dorris

Fiat

Grout

Detachable Demountable Rims

AMERICA'S MOST POPULAR DEMOUNTABLE RIMS

STANDARD

UNIVERSAL DEMOUNTABLE RIM



Exhibited at Their Respective Booths

ALSO RECOMMENDED AND SOLD BY THE

United Rim Company
Continental Caoutchouc Co.
Diamond Rubber Co.
G & J Tire Company
Goodyear Tire & Rubber Co.
B. F. Goodrich Company
Hartford Rubber Works Co.
Morgan & Wright
Mott Wheel Works
Standard Welding Co.
United Wheel & Rim Co.

Hudson

Lancia

Locomobile

Lozier

McFarlan

Oldsmobile

Packard

Peerless

Pope-Hartford

Renault

Simplex

Stearns

Stevens-Duryea

Velie

Chicago Auto Shows—Space No. 10 Coliseum

Announcement

We beg to announce that

The Alumaloyd Products Co.

a \$250,000.00 Ohio Corporation, will take over the process, good will and plant of the Alumaloyd Sheet Department of the Stark Rolling Mill Co. of Canton, Ohio.

The general offices and mill of the new corporation will be located at Canton under the management of Mr. R. A. Bartholomew who has spent years in the development of this business.

An enlarged plant and modern equipment will enable the new company to meet the ever increasing demand for its product.

Alumaloyd Products Co.

R. A. BARTHOLOMEW, Pres.

Effective January 16th, 1911

THE KNOBS WILL STOP YOUR SKIDDING

MORGAN & WRIGHT

NOBBY TREAD TIRES

The only tire ever produced which combines all the protection against skidding and drive slipping of the best tire chains with the wearing qualities of plain treads.

The big thick tough rubber knobs grip any kind of a road surface with bull-dog tenacity—yes, even wet, greasy asphalt pavements or roads covered with snow, mud or ice.

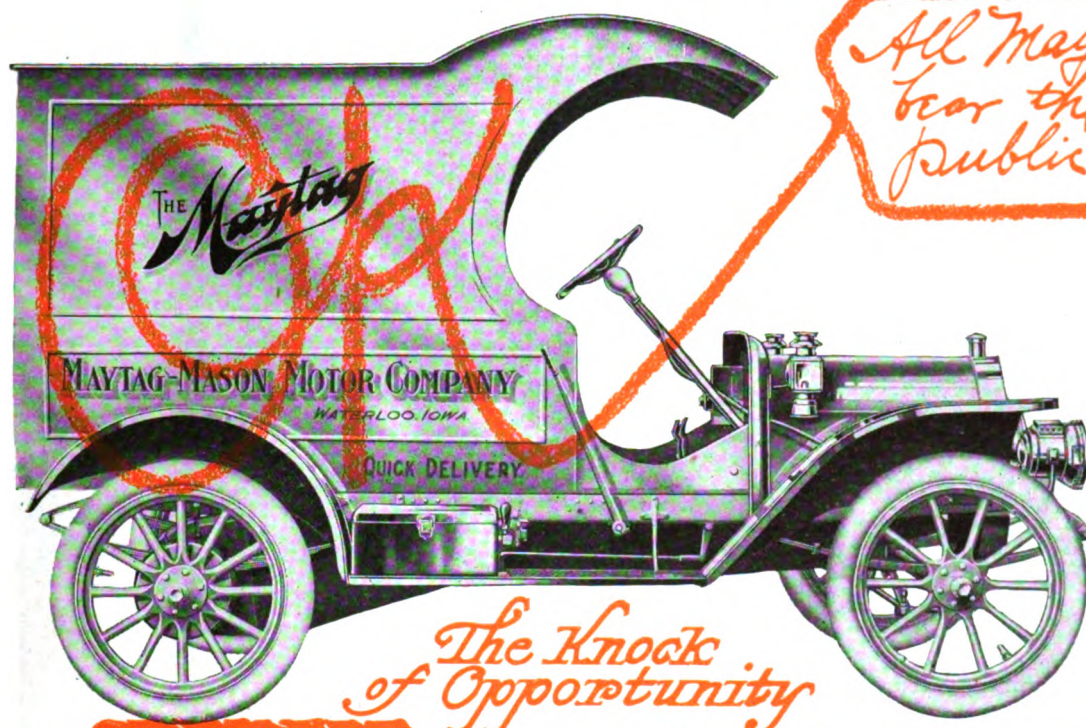
Nobby Treads will give absolute skidding protection that is always where you want it when you want it and will do away with the trouble, expense and excessive tire wear always attending the use of chains.

MADE IN
DETROIT

MORGAN & WRIGHT TIRES
ARE GOOD TIRES.

SOLD
EVERYWHERE





Opportunity + Action = Success

THE Commercial Car has come to stay. In three years' time the demand for this style of car will completely overshadow the pleasure car.

Every real live dealer who intends to stay in the retail automobile business and make money at it, has sooner or later got to sell commercial light delivery cars. He has got to get the right line of cars; cars he can depend upon; cars that will sell.

We are manufacturing the most complete line of commercial delivery cars built in America; we are selling them at prices remarkably low; our discount to bona fide dealers is extra liberal. Our cars are time tested and service proven—five years of successful motor car manufacturing has made them so. Why gamble on an experimental proposition when you can be certain of this Maytag line, a proved proposition? If you are out to make big money, make it fast, make it for a long time to come, here is a remarkable opportunity.

YOUR success in life comes through your ability to seize the money-making opportunities before your competitor does.

We can offer you the most ideal proposition ever heard of in the whole history of the automobile. It is better to act NOW than to wish you had; don't be the eleventh-hour man this time. Do it now.

Our new commercial car catalog, thoroughly descriptive of our line, is yours for the asking. Do it now. If you are open for a sales proposition that will net you big returns all through the year, write for our dealer's proposition. Here is the opportunity. This is the high-sign of success, the summons you will hear but once—act immediately by filling in the coupon below and mail it today. This is the opportune moment. Do it now—this is ACTION.

SUCCESS comes to the wise man who seizes his opportunities and acts quickly. We present the opportunity, we urge your action which will assure your success. We have proved our proposition to others, we can prove it to you. Big money is being made on our commercial cars; you can make it if you hustle. Do not content yourself with small profits on pleasure cars; big money awaits you if you sell the right line of Light Delivery Cars.

The Maytag line is the best procurable. Will you listen to reason? If so, then fill in the coupon below and mail it today.

COUPON

Do you want Catalog?

.....

Do you want Proposition?

.....

Name

Address

Maytag-Mason Motor Co.
WATERLOO, IOWA

McKim Copper Asbestos Gaskets

¶ The standard gasket with automobile engineers, ALWAYS, because they are the only reliable packing for gas engine flanges. Are made solely by

McCORD MFG. CO.

Detroit

ALL SIZES AND SHAPES IN STOCK
IMMEDIATE SHIPMENTS—LOWEST PRICES

SEE OUR EXHIBIT AT THE CHICAGO SHOW

Get Away from the Advertising Novelty, the Immaterial, the False and the Misleading—The Dust Thrown Up to Cloud Your Vision—

Look to what counts most, what costs the manufacturer most, and what determines the service you are going to get for your money. It is the quality and quantity of materials used, the quality of workmanship employed in their assembling, and the knowledge and character of the men behind the guns.

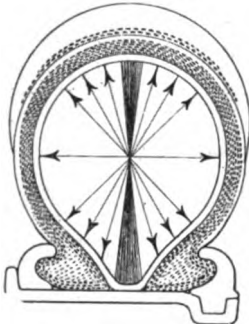
We make the assertion that with the reduced prices on Diamond tires now in effect, even the manufacturer of low-priced cars will not resist giving you Diamond tires if you specify Diamond and stand firm.

**Their
Twelfth
Triumphal
Year**

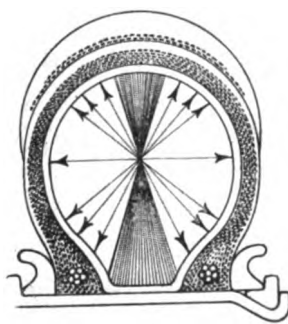
Diamond TIRES

Have yet to offer a feature adopted for advertising purposes.

A Correct Presentation of the Clincher and Straight Side Tire Subject



Quick Detachable Clincher Tire and Rim



Straight Side or Hookless Tire and Rim. Also called Mechanical type and Dunlop type.

Arrows in both tires show the radial lines of air pressure working from the center and how the radially acting forces balance each other. The black portion shows that part of each tire in which this pressure is not equally balanced.

THE RELATIVE MERITS of these tires, differing only in method of attachment, have never been correctly presented so far as we know. We wish to correct some of the misapprehensions and misrepresentations heretofore current.

THE CLINCHER AUTOMOBILE TIRE IS THE STANDARD OF THE WORLD. With 10 years of development by the leading manufacturers, it stands today a faultless construction. The principle of utilization of inflation pressure for retention on the rim is mechanically correct. The radial lines of force tending to cause the tire to leave the rim is neutralized by the radially acting forces, thereby reducing the strain on the beads to a minimum. The lateral lines of force in a properly designed clincher tire are all active in keeping the tire beads in the hooks of the rim.

WE EMPHASIZE "PROPERLY DESIGNED" because it is readily seen that if a tire is out of balance—that is, too large in cross section for the rim—the active forces will not balance perfectly. In a properly designed clincher tire inflation but increases the force holding the tire on the rim.

Diamond Tires Are Made in Both Clincher and Straight Side Types

NO INHERENT POINTS in the construction of the Straight Side tire prevent its production in first-class quality. This type has never equalled the leading clincher tires because its sales have been almost exclusively to builders of low-priced cars unwilling to pay the price for Diamond quality.

AS TO SIZES—Note that the Straight Side rim has a wider base between the flanges than the clincher rim. Therefore, a given amount of tire material will enclose greater air space. We do not wish to deceive the public, however. This difference does not mean more high cost materials, it means more inexpensive air and the carrying capacity of a Straight Side tire is exactly the same as that of a clincher tire of a corresponding size.

The Straight Side tire is retained on the rim by braided bands of the finest piano wire of tremendous strength, which is necessary as the strains in this tire are unbalanced strains. These braided wire bands are rigid. They neither stretch nor constrict to grip the rim, nor does those of any other tire manufacturer constrict. Fractional contact under pressure of inflation prevents "creeping."

THE DIAMOND STRAIGHT SIDE TIRE IS THE BEST OF ITS KIND, built with a clear understanding of the principles involved, not for the purpose of securing initial equipment orders at a low price.

RIM CUTTING IS SOMETHING WHICH HAS FIGURED MORE LARGELY IN ADVERTISING MATTER than in cost to the tire user. IT IS CAUSED by imperfectly fitting tires in either the clincher or straight side type. Rim cutting is not ordinarily one of the results of riding tires deflated, but instead bruises and loosening of the tread are likely to result. We do not guarantee tires not to be injured by deflated running nor does any other manufacturer.

PATENTS—Neither the clincher tire nor the Straight Side tire is covered or controlled by any valid patent.

Tire Sizes—So-called "Oversize" and Other Novelties

WE WISH IT DISTINCTLY UNDERSTOOD that Diamond tires are neither oversize nor undersize. Their size is not determined for advertising purposes and should not be. It is fixed intelligently and scientifically by engineers who know, and Diamond tires are all the right size for their respective rim sizes. There is no larger Straight Side tire, as compared to the clincher type, than the Diamond. But we have frankly told you this means not more rubber, but more air. The point is that you must not fix your attention on immaterial or misleading points. An inferior tire with a thin wearing surface is a poor thing at any price—no matter how attached to the rim or how much "oversize."

What Counts Most, costs the manufacturer most and determines the service you get is quality and quantity of material used and the knowledge and character of the men behind the guns.

It means more to you that we offer tires containing better rubber, more rubber, thicker treads—tires that will last longer, puncture less easily, stone bruise rarely—than that we give you a little larger tire—that is, a little more air.

THE DIAMOND RUBBER COMPANY, Akron, Ohio

SPECIAL TIRE INSTRUCTION BOOKLET SENT UPON REQUEST

1911

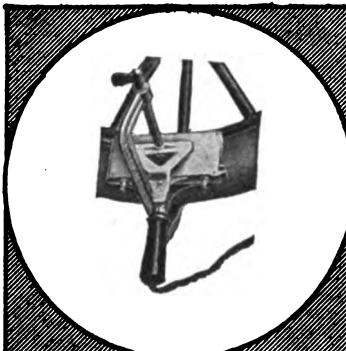
THE ONE COMPLETE

SHALER

1911

LINE OF VULCANIZERS

Mr. Jobber, you can now purchase all your vulcanizers from one firm, do away with a lot of red tape and minimize transportation expenses. We manufacture both electric and flame-heated vulcanizers—for the large garage, for the small repair shop, for the car owner; vulcanizers for use in the city or on the farm; vulcanizers for shop use or road side repairs; all kinds of vulcanizers.



Types B and D Electric Vulcanizer

These types operate from city lighting current. They are designed for use by both garages and private owners, for tube repairing and for mending cuts in casings without taking tire off the wheel. Type B has a rheostat to control the heat and will operate on both direct and alternating current. Type D has an automatic thermostat heat control and operates on either direct or alternating current as desired.

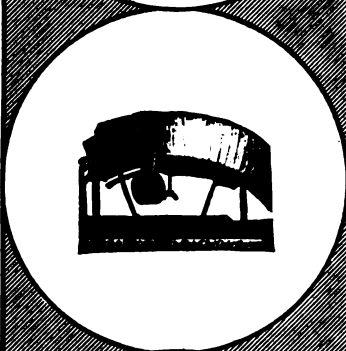
Type B, Iron.....	\$20.00
Type B, Nickel plate aluminum.....	25.00
Type D, Iron.....	12.50
Type D, Aluminum.....	15.00



Type J "Stitch-In-Time"

The Stitch-In-Time does the same work as Types B and D Electric. It is heated by an alcohol lamp and can be used by the roadside or on the farm as well as in the city. The temperature is regulated by an automatic thermostat and the machine is compact enough to carry in a tool kit.

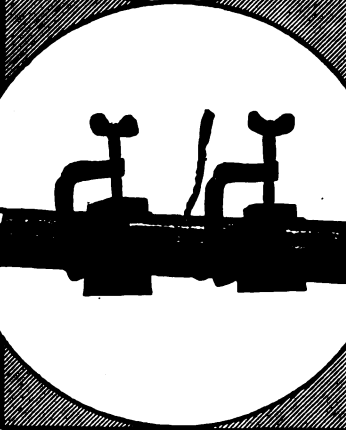
Type J, Stitch-In-Time.....	\$10.00
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Type C Electric Vulcanizer

This type is for use in public garages, for repairing blow-outs in casings. It fits inside the tire and brings the heat right against the new fabric, so that it is not necessary to cut away a lot of rubber and fabric to make a repair. The repair is made just as strong as desired by putting in additional layers of fabric on the inside of the tire.

Type C, for alternating current.....	\$20.00
Type C, for direct current.....	25.00



Type E "Gang" Electric Vulcanizer

This type is for use in garages that have a quantity of inner tube work. It is twenty-four inches long and is furnished with four patent clamps and four blocks for four sizes of repairs. It will vulcanize six tubes as quickly as one, or will repair a two-foot slit at one setting.

Type E, for alternating current.....	\$25.00
Type E, for direct current.....	30.00

Write at once for complete description of our line and proposition for 1911.

C. A. SHALER CO., Mfrs.

1201 Fourth Street, Waupun, Wis.

UNISPARKER

THE UNISPARKER
affords the best in ignition
reliability and efficiency, yet its
cost is within the reach of the most
careful spender.



With the Unisparker, your engine receives a hot, heavy spark for each power impulse at the exact instant to do the most effective work. A set of ordinary dry cells will run your car from 2,000 to 3,000 miles.

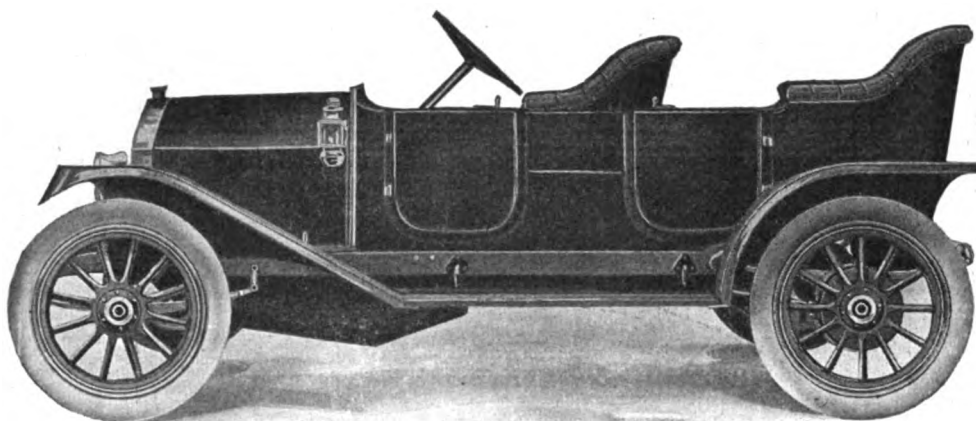
In principle, it is simplicity itself. There are no vibrators or commutator. There is only a non-vibrating unit coil and a special contact maker having but three moving parts, none of them subject to appreciable wear, and a single contact which does not require frequent adjustment.

Write us or ask your repairman today about the Atwater Kent System even if you are not yet ready to purchase. Overhauling time is now here, and it will be worth money to you to know about the Unisparker now. We will be glad to send some interesting literature and write you relative to your particular requirements on receipt of your name and address.

See the Unisparker at the Chicago
and Boston Shows.

ATWATER KENT MFG. WORKS

PHILADELPHIA., PA.

Marion**"Thirty"**30 Horsepower
110-inch Wheel BaseRoadster Style,
\$1,000Torpedo Roadster,
\$1,0505-Passenger
Touring, \$1,1505-Passenger
Fore Doors, \$1,200Headlights and
Magneto Included

With 30 Horsepower—110-inch Wheel Base—\$1,200.

Marion**"Forty"**40 Horsepower
115-inch Wheel Base

Roadster Style, \$1,600

Torpedo Roadster,
\$1,6504-Passenger Close-
Coupled, \$1,6005-Passenger
Touring, \$1,6504-Passenger Coupe,
With Extra Body,
\$2,000

Limousine, \$2,500

Headlights and Bosch
Magneto Included

See the Thousand-Man Car

You will find no other car in the city so interesting as the Marion for 1911.

For these new Marion models which are now on exhibit show all the best ideas of a thousand designers. You can see all the greatest features which this industry has developed in this one composite car.

It is the product of a thousand brains.

All the Best Ideas

Eight years ago we started out to combine in one car all the best ideas that developed.

We had our own designers, our own engineers. Six of the ablest in America have worked on Marion cars. And they invented some features which no other man has excelled.

But their main duty has been to put other men's ideas to a test. They have watched every improvement, every bettered material, every new device. They have compared one with another—in road tests and contests—until they absolutely knew which was best.

These men have smothered their own pride of invention. When any man anywhere devised anything better they bought or adopted that man's idea.

The one idea has always been to have

every feature in the Marion car the very best of its kind in existence.

For eight years we have worked with that one idea. Each important feature has been compared with others over thousands of miles of road. Each has been tested in many national contests. And thousands of Marion owners have helped us make the comparisons.

It is very interesting to see the final result in the Marions for 1911.

The Men Who Helped

We gladly give public credit to the men who have helped us most.

The motor in our "Forty" is the latest Continental creation. The engine in our "Thirty" is made for us by one of our largest competitors. They ask us not to state the name.

These engines—in more than fifty thousand famous cars—have proved themselves the best engines made. No other engines have done so much to build up great reputations.

We use the Kinsey pressed steel frames, the Warner differential, the Warner steering gear. We use the Stutz transmission, the Timken bearings, the Splitdorf and Bosch magnetos. And we use the Sheldon springs—the costliest springs made in America.

These things we buy because we have proved them better than anything we can make. We make in our own shops only such parts as we can make better than others.

Cutting the Cost

Every Marion feature—whether we make it or buy it—has been adopted without regard to cost. If we knew anything better at double the price we would get it.

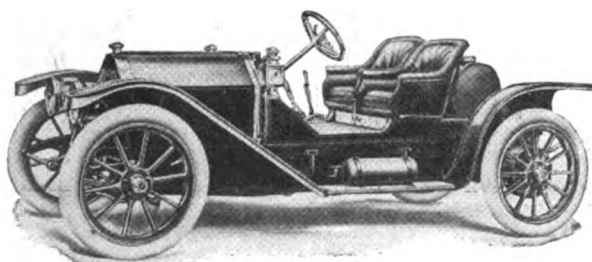
But other men have worked equally well to cut selling cost and overhead expense. We believe there is no other car where so much of the price goes into the making cost.

The 30-horsepower Marions, as a result, sell for \$1,000 to \$1,200. The wheel base is 110 inches. The price includes headlights and magneto.

The Marion "Forty," with 115-inch wheel base, sells for \$1,600 and \$1,650. Compare that with other 40-horsepower cars. The car nearest this "Forty" in style and features is selling for \$2,850.

Come and see these Thousand-Man cars. Let us explain why each device was adopted—how we proved it better than others. If you cannot come, please write for our catalog, showing all the new Marion models.

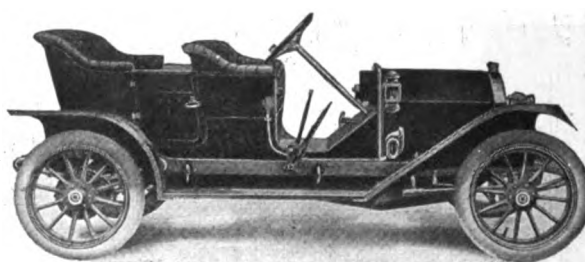
THE MARION SALES COMPANY, Indianapolis, Ind.



With 30 Horsepower—110-inch Wheel Base—\$1,000
With 40 Horsepower—115-inch Wheel Base—\$1,600

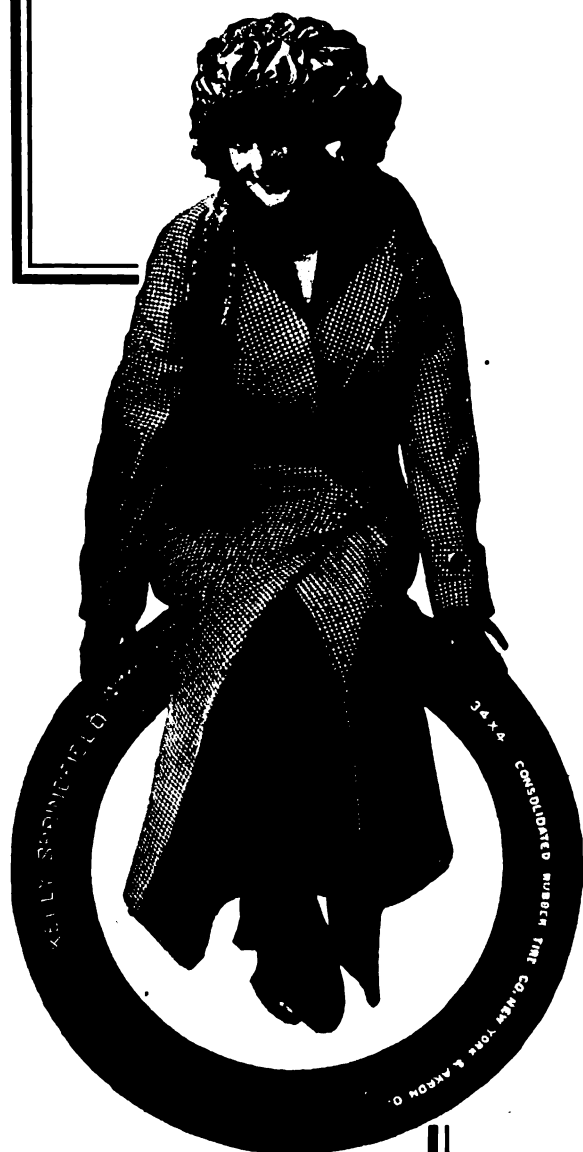
Marion

Licensed
Under
Selden
Patent



With 30 Horsepower—110-inch Wheel Base—\$1,150
With 40 Horsepower—115-inch Wheel Base—\$1,650

Kelly-Springfield Automobile Tires



The name "Kelly-Springfield" has identified the best in tires since rubber was first applied to wheels.

The automobile called for a different tire, but not for a different standard of quality. You can depend upon the Kelly-Springfield for your car just as drivers have depended upon it for their carriages during the past fourteen years.

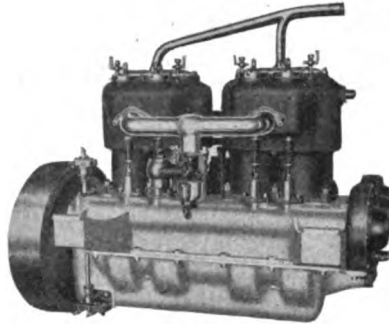
Specify Kelly-Springfield Tires on your automobile. They cost no more than any first-class tire and are better.

Consolidated Rubber Tire Co.

20 Vesey Street, New York

Branch Offices: New York, Chicago, Philadelphia, Boston, St. Louis, Detroit, Cincinnati, San Francisco, Los Angeles and Akron, Ohio.

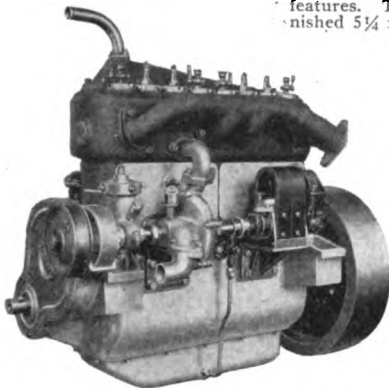
For months past you have been told about these new motors. They are now at the Chicago Automobile Show, Space 65.



Model "T"

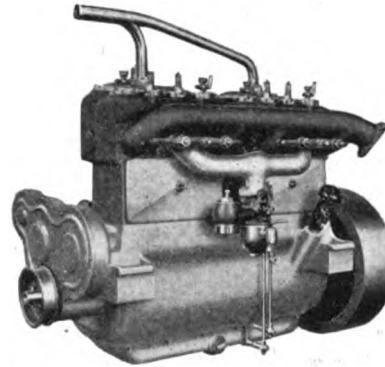
Cylinders 5 x 5 3/4-in., cast in pairs. "T" head type with main frame construction. Special automatic oiling system, liberal bearings, large valves and other notable features. This model of motor will be furnished 5 1/4 x 5 3/4 size.

These motors are the acme of high grade workmanship and design, embodying the up-to-date features. Examine them at the Chicago Auto Show, Space 65.



Model "C"

Cylinders 4 1/2 x 5 1/4-in., cast en bloc. "L" head type, furnished in main and subframe construction. Also supplied in complete unit power plant using multiple disc clutch and selective type transmission. This motor will also be supplied in 3 3/4 x 5 1/4-in. size.



Model "E"

Cylinders 4 1/2 x 5 1/4-in., cast in pairs. "L" head type, supplied in both main and subframe construction. This motor can be had in complete unit power plant using multiple disc clutch and three speed selective type transmission.

CONTINENTAL MOTORS

For the Season of 1912

The above mentioned motors are the ones that have caused such a furor in the motor world. Even during their "blue print" stage, they received the approval of many leading car manufacturers, and you can feel assured that every effort on our part has been made in producing those motors which are sure to satisfy the most exacting pleasure and commercial vehicle manufacturers. Prices and full data are now awaiting you. **EXAMINE THESE NEW MODELS AT THE CHICAGO AUTOMOBILE SHOW, SPACE 65. CONTRACT NOW FOR YOUR 1912 REQUIREMENTS.**

CONTINENTAL MOTOR MFG. CO., Muskegon, Mich.

Factory Representative
K. F. PETERSON
150 Michigan Avenue
CHICAGO, ILL.



Factory Representative
L. B. BOLTON
1610 Ford Building
DETROIT, MICH.

Factory Capacity 25,000 Motors Per Annum

At the two New York Shows more pneumatic-tired cars were equipped with Goodyears than any other kind. At the Palace Show our lead over our nearest competitor was 57%. At the Garden Show our lead on non-skid tires was 300%.

How Motorists Lose Millions by Not Knowing Tires

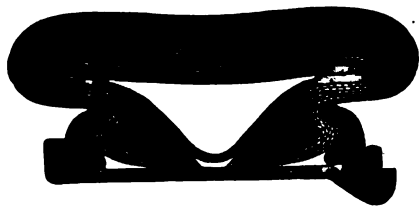
Goodyear tire sales just trebled last year—jumped to 8 1-2 million dollars. Yet these patented tires, for most of the year, cost 20 per cent. more than other good tires. All because Goodyear No-Rim-Cut tires get rid of rim-cutting entirely. And because Goodyear tires are 10 per cent. oversize. These two

features together double the worth of a tire.

Now these premier tires—because of enormous production—cost the same as other standard tires. And 64 leading motor car makers have contracted for them for 1911. Motor car owners can save millions of dollars by learning about these tires.

No Rim-Cutting

Goodyear No-Rim-Cut tires absolutely eliminate all danger of rim-cutting. And that ruins more tires than any other one cause. Let us explain how one Goodyear invention gets rid of this trouble entirely.

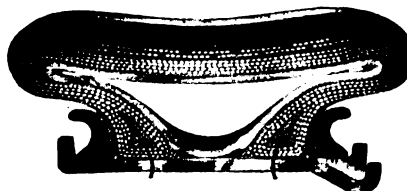


The picture shows an ordinary tire—a clincher quick-detachable—fitted in a standard universal rim. This is the rim adopted by all the big rim makers. The same principle is used in demountable rims.

All clincher tires have these hooks on the base. The rim flanges, with such tires, must be turned to hook inward—to grasp hold of this hook in the tire. That's how the tires are held on.

Note how the thin hook of the rim then digs into the tire. That is what causes rim-cutting. When the tire is deflated, as shown in the picture, it comes right against that thin edge. That's why driving one block on a flat tire may wreck it beyond repair.

no hooks on the base—nothing to fit into these rim flanges.



The 63 Braided Wires

When the tire is deflated, as shown in the picture, it comes against the rounded edge. Rim-cutting is simply impossible.

We have sold half a million No-Rim-Cut tires. We have run them deflated in a hundred tests—as far as 20 miles—with never one instance of rim-cutting.

How We Control It

Unless a tire is to be hooked to the rim the base must be made unstretchable. And we control the only practical way to make an unstretchable base.

We do it by running 63 braided piano wires through the base on each side. Nothing whatever can stretch the tire over the rim.

When the tire is inflated those braided wires contract. The tire is then held to

the rim by a pressure of 134 pounds to the inch. It can't creep on the rim, and no tire bolts are needed to hold it on.

Other makers—to meet the competition—run a single wire through the base, or use a hard rubber base. But neither device will do. The braided wires alone contract under inflation, and that is essential in a safe hookless tire.

Goodyear Tires 10% Oversize

Another fact is that Goodyear tires average 10 per cent oversize. That means 10 per cent more tire to carry the load. It means, on the average, 25 per cent additional mileage with no extra cost.

This oversize is vital, for motor car makers—in these days of close figuring—rarely provide a tire large enough for any extra load. When you add extras to your car—such as top, glass front, gas tank, gas lamps, etc.—you overload the tires. The result is a blow-out, and it often occurs while the tire is new.

Goodyear tires take care of these extras, because of their oversize. That fact alone, on the average car, will save 25 per cent on tire bills.

These tires which can't rim-cut cost this year just the same as tires that do. These oversize tires cost the same as skimpy tires. You can avoid all this trouble—save all this expense—by simply insisting on Goodyear No-Rim-Cut tires.

Please ask for our book, "How to Select an Automobile Tire." It explains a dozen other reasons why Goodyear tires are best.

The Goodyear Way

The next is a Goodyear No-Rim-Cut tire fitted in the same universal rim. The movable rim flanges are simply reversed to curve outward when you use this tire. For the Goodyear No-Rim-Cut tire has

GOODYEAR
No-Rim-Cut Tires

The Goodyear Tire & Rubber Company, Arthur St., Akron, Ohio

We Make All Sorts of Rubber Tires

Branches and Agencies in all the Principal Cities

Canadian Factory: Bowmanville, Ontario

Main Canadian Office: Toronto, Ontario

See Our Exhibit at the Shows—Chicago, 51-52 Coliseum Gallery; Boston, F-543-544.

(187)

The Manufacturer's Responsibility to His Customers

Today with the automobile business settling down to a firm basis it is interesting to note that the concerns who have been most stable, and for whose product there has been unceasing demand are those concerns who have not followed fads, but have gone on year after year building their cars as best they knew how, that every customer might be satisfied, and receive full value for the money he had spent.

Now the manufacturer faces a new public, a better educated public, whose demands are becoming more reasonable and sane every day, and at the same time their demands are more inflexible. They demand that no matter what the price of the car, certain accessories must be of the highest type. This is particularly true of ignition, and the manufacturer who provide

DELCO

An Ignition Known to be Dependable

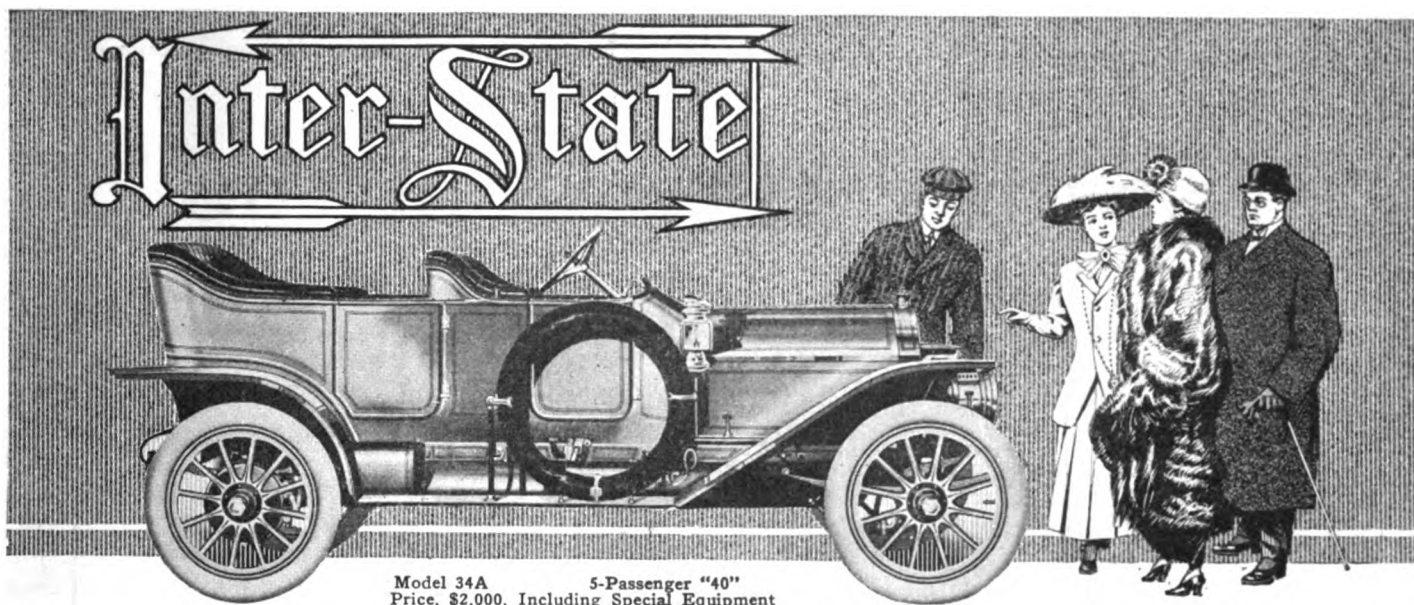
immediately creates in the minds of his prospects a feeling of security. Delco Ignition is known to cost more than ordinary ignition, so that a manufacturer must be willing to furnish only the best when he buys it.

Delco systems run the life of the car with only two or three adjustments of one set of contacts—an adjustment anyone can make in thirty seconds. Six dry cells will run a Delco equipped car 2,000 miles or more, giving full power until the batteries are entirely exhausted.

No other ignition system now made, either battery or magneto, will give your motor the flexibility that Delco will give; no apparatus could give more steady, dependable service year after year. Decide now to equip your motor with Delco, and rid yourself of ignition worry.

The Dayton Engineering Laboratories Co.

DAYTON, OHIO, U. S. A.



Model 34A 5-Passenger "40"
Price, \$2,000, Including Special Equipment

Real Value Today Determines Your Choice of an Inter-State

And why shouldn't an automobile be purchased on the same business principle as any other merchandise? Since last year's explosion in motordom the smoke has cleared away, disclosing the general automobile business to be jolted down to where it belongs. **Today motor cars are judged by what they DO, in proportion to their cost.** The purchaser has learned to ask himself the question, "How much automobile and of what quality am I getting for my money?" Please allow us to answer both of these questions by your looking up the attractive display of Inter-State cars at the automobile shows and by writing for the comprehensive and interesting catalog.

The growth of the Inter-State's popularity has been most healthy. These cars have always been sold on the **Real Value** basis. Three years ago we built a car for \$1,750, that was immediately pronounced a wonder. After three years of service its popularity has caused us to build four additional acres of factory floor space to enable us to supply enough "40" and "50" models. The "40" cars continue to sell for \$1,750 and \$2,000, the "50" for \$2,700. **Greater motor car value cannot be purchased.**

Inter-State "40" 1911 Models

Consist of:

Five-passenger Touring Car.....	\$1,750
Single Rumble Roadster.....	1,750
Double Rumble Roadster.....	1,750
Four-passenger Demi-Tonneau	1,750
Four-passenger Torpedo-Touring Car..	2,000
Five-passenger Torpedo-Touring Car..	2,000

The motor for the above mentioned models is rated at 40 h. p. Average speed of 1,500 revolutions a minute. Bore, $4\frac{1}{2}$ inches. Stroke, 5 inches. L-head type. Valves all on one side of large diameter, nickel steel heads, carefully ground stems. Push rods with rollers of large diameter, providing rolling contact on cam shaft. Valve adjusting screws with fibre cushion heads, insuring silent valve action. Crankshaft special carbon steel, drop forged and double heat treated. Mounted in three bearings of large dimensions lined with die cast white brass of best quality and lubricated by force feed gear pump. Constant level splash oiling system, insuring accurate oiling at all times. Oil reservoir two gallons capacity. Sight feed in easily discernible position on dash, showing amount of oil flowing to bearings at all times.

Clutch and transmission housed in integral oil tight case, separated by retaining wall allowing use of special oils for each unit. Clutch of improved cork insert design, operating in oil. Eight cork insert discs enclosed between nine steel discs, providing contact of cork on steel. Throwout fork and collar provided with ball thrust, assuring long life. This construction provides a wonderfully smooth-acting clutch of long wearing qualities and gradual, easy, positive engagement. Gearset of selective type with three forward speeds and one reverse. Extra heavy

pitch gears of chrome-vanadium steel, running in oil. All clutch and transmission bearings are imported annular ball type.

50-Horsepower Torpedo-Touring Car, Five or Seven-Passenger \$2,700, All Equipment

This new and larger model incorporates the best features of the Inter-State "40." In the larger-sized car we have added a number of advanced points of construction, never before offered in any but the highest-priced machines. T-head type motor with separate inlet and exhaust camshafts. Suspended at three points, precluding any possibility of frame stresses being transmitted to the motor. Crankshaft supported by three bearings of especially liberal dimensions. Conservative rating of 50 h. p. at 1,500 revolutions per minute. Valves $2\frac{3}{4}$ inches in diameter, nickel steel heads with carefully and accurately-ground stems. Separable valve guides. Extra large, frictionless, roller push rods with fibre-cushion adjusting screws. All rollers and camshafts case-hardened and ground to exact dimensions. Cam-shaft and pump-shaft bearings eccentric, allowing very accurate adjustment of reduction gears. This feature with double gear on crank-shaft assures noiseless operation.

Special lubricating system with improved distributing pump assures positive delivery to the three main bearings. Oil overflow from bearings is retained in pockets in the false bottom of the oil-pan, allowing splash spoons on connecting rods to dip slightly. Sight feed located on dash, readily discernible, showing amount of oil supplied to bearings at all times.

Mechanically-operated cooling system actuated by centrifugal pump. Extra large water manifolds and

pipings. Radiator, cellular construction and of ample capacity to insure cooling of motor at all times.

Two complete ignition systems comprising dry batteries and four-unit coil and a specially imported high-tension magneto. Each system is provided with separate set of spark plugs.

Front axle of double-forged I-beam section, carefully heat-treated. Steering knuckle provided with ball thrust bearings to facilitate turning, and mounted on extra large hardened bolts.

Rear axle specially designed for Inter-State cars. Full floating type, completely provided with adjustments for accurately determining position of driving gears. Pinion shaft, pinion gear and differential mounted on single steel casting, insuring permanent alignment. Special torsion tube construction eliminates the use of torsion bars or distance rods. All wheel, rear axle and driving-shaft bearings of extra-large imported annular ball type.

Brakes located on rear axle, of internal expanding design. Service or foot actuated brake operating on drum 16 inches in diameter. Emergency brake operating on 12-inch drum. All brake bands with $2\frac{1}{4}$ -inch face, fully protected from dust and dirt.

Pressed steel frame narrowed in front and raised in the rear to allow full action of rear springs. Front springs semi-elliptic type, 40 inches long. Rear springs $\frac{3}{4}$ -elliptic, 48 inches long. All springs $2\frac{3}{4}$ inches wide, of special vanadium steel. All spring bolts provided with grease cups.

Tires, 36 x $4\frac{1}{2}$ inches, with demountable rims. Wheelbase, 124 inches. Tread, 56 inches.

Full Equipment

Consists of silk mohair top, two extra tonneau seats, horn, speedometer, windshield, black enameled Solar gas headlights with finest, most powerful lenses; combination oil and electric side and tail lamps, Prest-O-Lite tank, tire irons, completely equipped tool box, extra demountable rim, foot and robe rail.

Inter-State Automobile Co., Muncie, Ind.

See our Exhibit at the Automobile Shows

Chicago Coliseum Annex, P. I.

Boston Mechanics Bldg., Spaces 136, 142

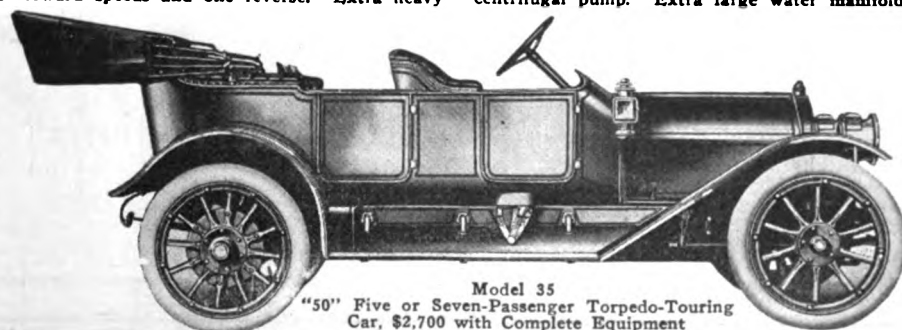
Tear Off This Reminder

Inter-State-Automobile Co. M. W. 126
Muncie, Ind.

Send me your catalog.

Name.....

Address.....



Model 35
"50" Five or Seven-Passenger Torpedo-Touring
Car, \$2,700 with Complete Equipment

(73)

See the Haynes at the Chicago Automobile Show

Space H-2—and let the
car convince you.

At New York the Haynes was the sensation of the show.

Visiting dealers and buyers literally wore a path between the Haynes Exhibit and the displays of the highest priced American and foreign makes.

They were making comparisons—proving to themselves that the Haynes has all the fine perfections that the most exacting purchaser could ask—that it is every inch and every part an automobile. The only car of established reputation at a moderate price.

The man with a Haynes is the man of the hour.

Write for Our New Annual

HAYNES AUTOMOBILE COMPANY

HAYNES

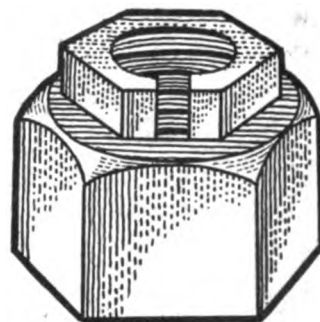
Station C

Kokomo, Indiana



This nut locks and stays locked until it is intentionally loosened when it can be easily removed with an ordinary wrench.

**Commercial Cars
with Solid Tires
Find It Invaluable**



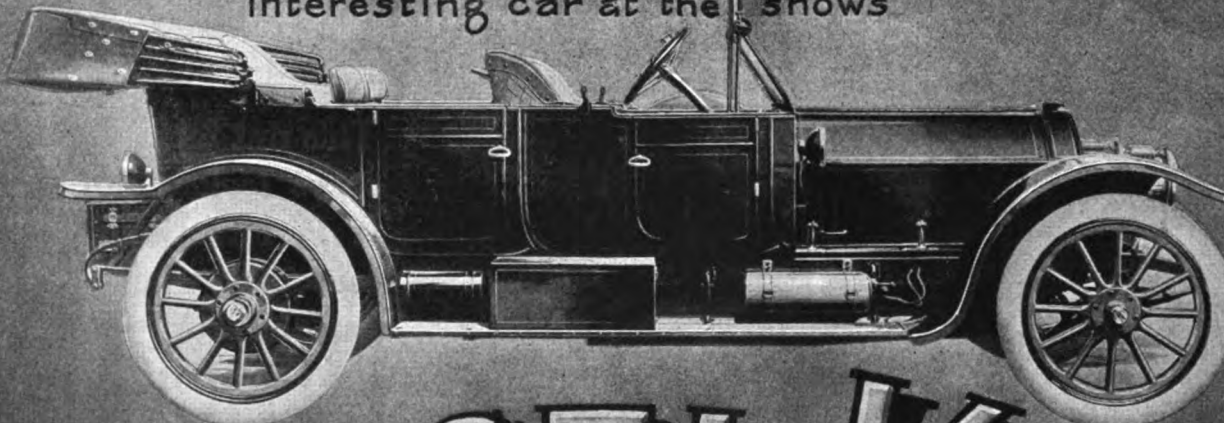
Columbia Improved Lock Nuts resist the effect of constant vibration which works such havoc with the ordinary nut. There is no such thing as "working loose" with Columbia Lock Nuts. They can't work loose.

The great railroad systems of the country are our largest customers. Makers of commercial cars will find the use of Columbia Improved Lock Nuts eliminates one prolific source of trouble.

Let us send you our interesting booklet "A Nut that Locks and Why." It is well worth your while.

COLUMBIA NUT & BOLT COMPANY
Bridgeport, Conn.

Model F.11 60 H.P. "Six" — the most interesting car at the shows



KISSEL KAR

Every Inch a Car

This 60 H. P. "Six" at \$2500 (fore-door \$100 extra) is a value never equalled in the whole history of the industry. It is a roomier car than the average "Six," in finish, appointments and luxurious comfort taking its place among the few really superior automobiles. It belongs to the class of car on which manufacturers, because of the class of buyers, have depended for extravagant profits. Now, for the first time, the price of a big, roomy, superb, high powered, seven passenger "Six" is reasonably proportionate with the cost of manufacture—the extravagant profits cut out—and the price is even lower than is being charged for lower powered, less roomy, less luxurious, four cylinder cars. This is a sensational value, yet we are doing nothing more than any fully equipped manufacturer *could do*, and inside of *five years will do*—cutting out the inflated profits.

THE FIVE PASSENGER, 4 CYLINDER KISSEL KARS—50 H. P., \$2000, and 30 H. P., \$1500—have the striking symmetry of design, roomy, luxurious tonneau and extra liberal wheel base that make the Kissel Kar instantly recognized anywhere as a car of above-the-average quality.

KISSEL KAR 3 TON TRUCK—15 to 25% more economical of gasoline than average trucks; double wheel drive at will of driver preventing stalling when traction wheel is on ice, in mud or hole.

AT THE CHICAGO SHOW—Pleasure Cars, Space A-4 Armory; 3 Ton Truck, Section D, Main Floor.

KISSEL MOTOR CAR COMPANY

159 Kissel Avenue

Licensed under Selden patent.

HARTFORD, WIS.

ONLY FOUR TRUCK BUILDERS

Do Not Use TIMKEN Roller Bearings

on the commercial cars exhibited at the Madison Square Garden Show!

Commercial Cars	Number of Cars Shown	Front Wheel Bearings	Rear Wheel Bearings
Stearns	1	TIMKEN	TIMKEN
Morgan	1	TIMKEN	TIMKEN
Pierce	1	TIMKEN	TIMKEN
Waverley	2	2 TIMKEN	2 TIMKEN
Knox	3	3 TIMKEN	3 TIMKEN
Peerless	2	2 TIMKEN	2 TIMKEN
Hewitt	3	3 TIMKEN	3 TIMKEN
Autocar	10	10 TIMKEN	10 TIMKEN
Reliance	3	3 TIMKEN	3 TIMKEN
Rapid	4	4 TIMKEN	4 TIMKEN
Sampson	1	1 Ball	1 TIMKEN
Grabowsky	7	7 TIMKEN	7 TIMKEN
Lansden	5	5 TIMKEN	5 TIMKEN
Studebaker	5	5 Plain	5 Plain
Studebaker	3	3 Plain	3 Plain
White	7	7 Ball	7 Ball
Packard	3	3 TIMKEN	3 Ball
Mack	6	6 TIMKEN	6 TIMKEN
Alco	6	6 TIMKEN	6 TIMKEN
Alco	1	1 TIMKEN	1 TIMKEN
General Vehicle	1	1 Plain	1 Plain
Detroit Electric	6	6 TIMKEN	6 TIMKEN
Pope	2	2 TIMKEN	2 TIMKEN
Pope	2	2 TIMKEN	2 TIMKEN
Franklin	4	4 TIMKEN	4 TIMKEN
Reo	2	2 TIMKEN	2 TIMKEN
Overland	3	3 TIMKEN	3 Ball
Brush	3	3 Ball	3 Ball
Atlas	3	3 TIMKEN	3 TIMKEN
Randolph	3	3 TIMKEN	2 TIMKEN
McIntyre	2	2 TIMKEN	2 TIMKEN
Garford	2	2 TIMKEN	2 TIMKEN
Garford	3	3 TIMKEN	3 TIMKEN
Ward	1	1 Plain	1 Plain
Ward	1	1 TIMKEN	1 TIMKEN
Kissel	2	2 TIMKEN	2 TIMKEN
Locomobile	2	2 TIMKEN	2 Ball

THE TIMKEN ROLLER BEARING CO., Canton, Ohio, U. S. A.



THE AMERICAN

50 H. P. Traveler Model, Forty Inch Wheels, Underslung Frame

It isn't hard to reconcile the low cost of upkeep, the low cost of gasoline and tires enjoyed by the owner of an American Car, when the design of this car and the fine material and workmanship that enters into it are understood.

Let us explain briefly the advantages of the underslung frame.

To begin with, the motor will deliver to the rear wheels, by reason of the **straight line drive**, and the character of the universal used, and a full floating type axle, more horsepower in proportion to the amount generated, than any car built at home or abroad.

This type of construction permits the use of **forty inch wheels**, thus solving the tire question. It is unanimously conceded that the larger the wheel the easier the riding qualities, and the longer the life of the tires.

75% of the fatalities in motoring are due, as the press expresses it, to "turning turtle." The under-

slung frame permits such a low center of gravity that it is not only practically impossible for it to turn over in turning corners at a high rate of speed, but effectually eliminates side lash, so deadly to the life of tires and so detrimental to comfort in driving and riding.

Our underslung construction insures absolute immunity from danger arising from a broken spring.

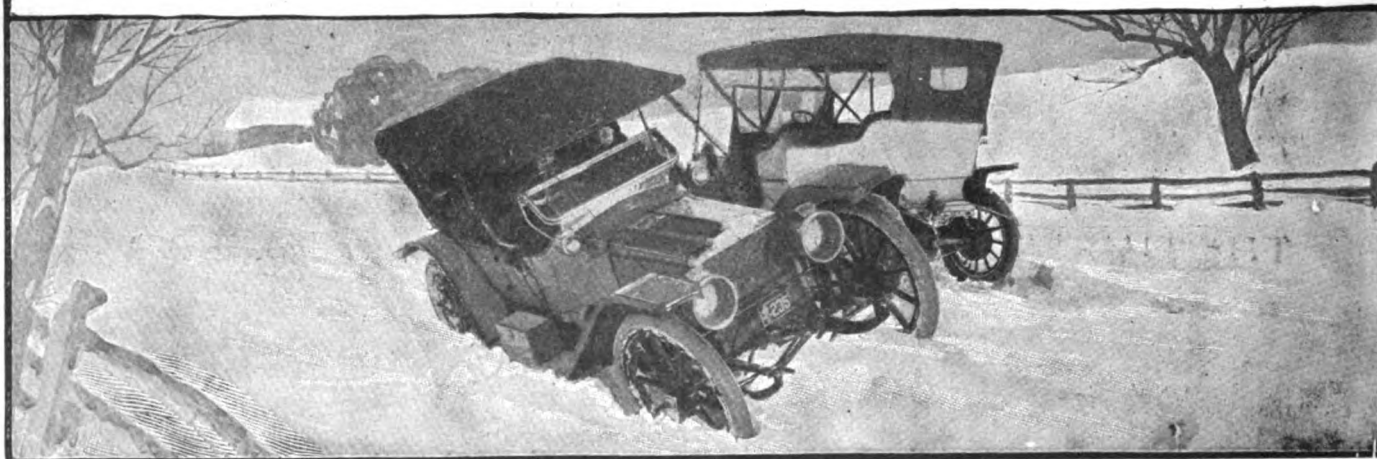
The photograph below gives you ocular proof of one of the great advantages of our underslung frame. This cut is made from an actual photograph of a motoring incident that occurred near Detroit, Mich., early in January. The American, in passing another car, ran into a ditch full of snow, and was turned at an angle of nearly 50%. A car of ordinary construction would, undoubtedly, have turned over. The car was going at the rate of about 35 miles an hour when it struck this ditch.

Increased factory facilities will enable us to build an increased number of cars for 1911. We will be glad to correspond with a few more responsible dealers.

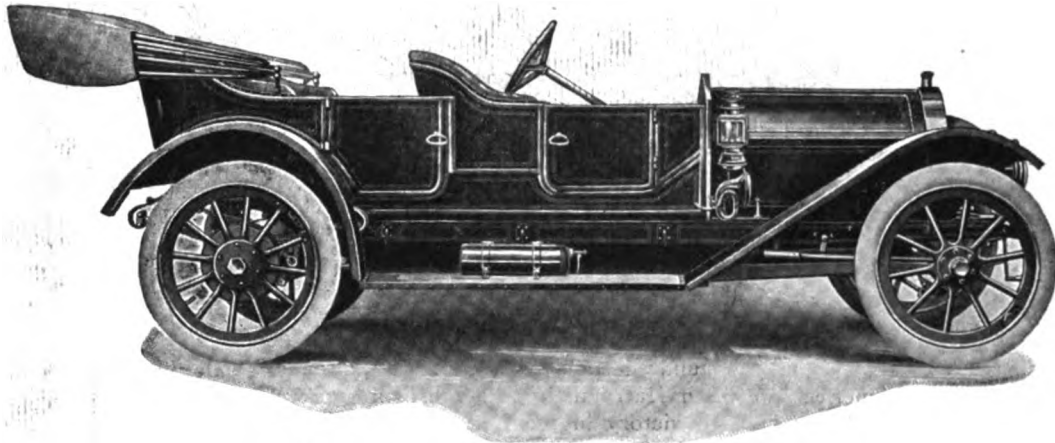
AMERICAN MOTOR CAR CO., Dept. 15, Indianapolis, Ind.

Members Association Licensed Automobile Mfrs.

We will exhibit at Chicago, First Regiment Armory Building, Space B-4, Main Floor.



A New Pace in Motor Car Values Has Been Made By The **McFARLAN SIX 1911**



Big Six Model 32, price complete, with Fore Doors and Mohair Top, \$2500; 128-inch Wheel Base, 36-inch Wheels, Unit Power Plant, Multiple Disc Clutch 50 to 60 H. P. Cylinders, 4 x 5. Same Chassis fitted with Runabout Type Body, Fore Doors, Mohair Top, complete, \$2500. We also make a Touring Car, 6-Cylinder, 3½ x 4, 35 to 40 H. P., complete with Top, \$2100. Runabout, same Chassis, \$2000.

The man today who measures motor car values by the standards set by the popular priced, widely advertised four cylinder cars of 1908, 1909 and 1910, will discover to his profit, if he will investigate, that a new era in construction and a new era in values was ushered in some time ago by The McFarlan Six.

A little investigation will prove for instance that you can buy a McFarlan Six for practically the same money a popular priced four costs.

And this doesn't mean a car "skimped" and cheapened to meet a price. It means a highly developed, highly finished, high powered car, made of the very best materials and designed right up to the minute.

Any dealer, or prospective buyer, who will write for our literature, will readily recognize after reading that the McFarlan Six is the greatest motor car value in the market.

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The New York Sun of January 2 commenting on the Automobile Show exhibit says of the McFarlan:

The Big Six and Little Six McFarlan cars come in for a great deal of notice. On the big car the foredoors are removable. In the smaller cars they are fixed. Prices of these cars range from \$2,600 down to \$2,000, there being no less than six cars in the line. The smaller car has a 35-40 horsepower engine; the other a 50-60. Dual Ignition is provided on both, with Stromberg carbureter. There is an option of Schebler in the larger machine. Both cars have three speeds forward and one reverse. The cars are made with attractive bodies, Model 34 of the Big Six, a racy looking runabout with a cozy top, being particularly striking.

McFarlan cars were entered in the races at Indianapolis on September 5, the first appearance of the Indiana machines in competition. They did very well indeed. A stock car made 200 miles in 183 minutes 16 seconds, and averaging seventeen miles to a gallon of gasoline.

Delaware Delays Action.
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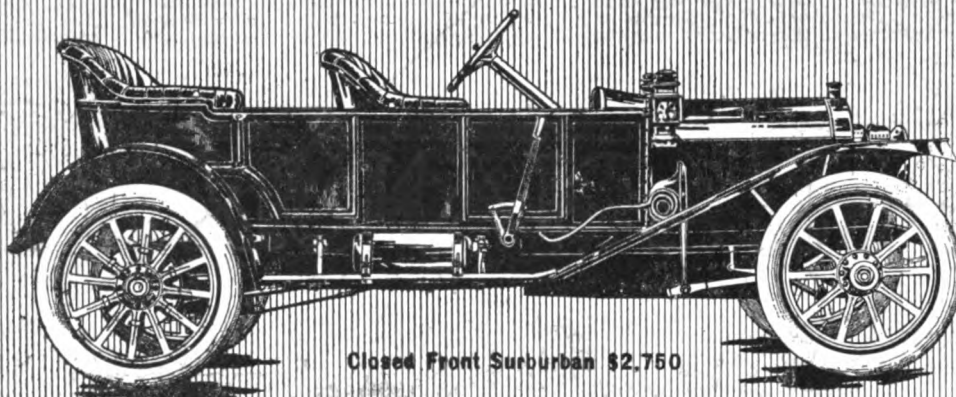
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THE McFARLAN MOTOR CAR CO., Desk D, Connersville, Ind.

THE MARMON

"The Easiest Riding Car in the World"



Closed Front Suburban \$2,750

The Fastest "Century"

The fastest hundred miles ever made by an automobile in America was when Harroun drove a Marmon stock chassis—the kind you buy—to victory in the Los Angeles Grand Prize. He covered 100 miles in $76\frac{1}{3}$ minutes, without a stop, a rate of 78.6 miles per hour. The car was a Marmon 32 (318 cu. in. displacement). This record has never been equalled in America by any of the big cars or special racing machines.

Some of the Marmon Victories

Cobe Cup Race
200 Miles—163½ Minutes
Wheatley Hills—Vanderbilt
190 Miles—190 Minutes
Atlanta A. A. Trophy
120 Miles—107 Minutes
Los Angeles—Two Hours
148 Miles—120 Minutes
Vanderbilt—Donor's Trophy
278.08 Miles—256¼ Minutes
Elgin-Kane County Trophy
169 Miles—184¼ Minutes

Wheeler & Schebler Trophy
200 Miles—166½ Minutes
Atlanta Speedway Trophy
200 Miles—182½ Minutes
Los Angeles—Grand Prize
100 Miles—76¼ Minutes
City of Atlanta Trophy
200 Miles—171½ Minutes
Remy Grand Brassard
100 Miles—80¾ Minutes
Savannah Challenge Trophy
277 Miles—263¾ Minutes

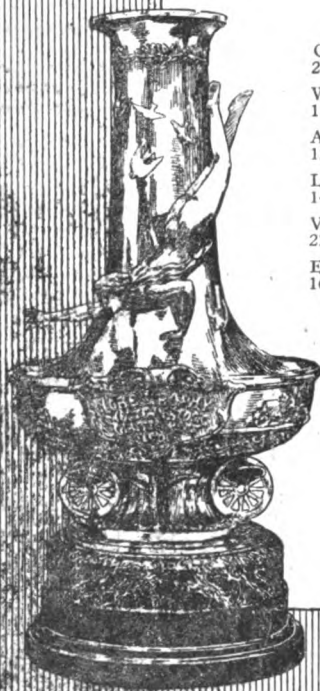
And a number of other Long-Distance Events

Nordyke & Marmon Co.

(Estab. 1851)

INDIANAPOLIS, IND.

(Sixty Years of Successful Manufacturing)



LICENSED UNDER SELDEN PATENT

\$3,500 in Twenty Cash Prizes

Annual Prize Awards to Employed Drivers of Winton Six Cars Increased \$1,000

TO the 20 chauffeurs making the best Service Records with Winton Six cars in 1911, the Winton Company will make cash awards of \$3500, as follows:

First prize	\$1,000
Second prize	500
Third prize	250
Fourth prize	150
Fifth prize	100
Sixth prize	100
Seventh prize	100
Eighth prize	100
Ninth prize	100
Tenth prize	100
Eleventh prize	100
Twelfth prize	100
Thirteenth prize	100
Fourteenth prize	100
Fifteenth prize	100
Sixteenth prize	100
Seventeenth prize	100
Eighteenth prize	100
Nineteenth prize	100
Twentieth prize	100



This will be the fourth annual contest for Winton Six chauffeurs.

In previous contests only ten prizes were given. But now we have *added \$1000 to the prize money* in order that *twice as many men* may receive awards.

The contest will start April 1, 1911.

Absolutely no entrance fee or other expense on the part of the chauffeur or his employer will be required.

If you do not drive a Winton Six, you cannot compete for these awards.

But if you are the employed driver of a Winton Six, no matter what the model, you are entitled to participate in the contest.

All Winton Six drivers are requested to send us the names and addresses of their employers, as well as their own names and addresses. We will send to these chauffeurs all the necessary report blanks and other information.

It will be to the car owner's advantage to encourage his driver to enter this contest. To win an award, the chauffeur must keep his car in good condition all the time, and at a minimum repair expense to the owner.

We shall be glad to send to any address our 1911 catalog and our Upkeep Book which contains in detail the reports that give the Winton Six *the world's lowest repair expense record*—43 cents per 1000 miles. Clip the coupon and mail it today.

The Winton Motor Car. Co.

Licensed under Selden patent.

Cleveland, O., U. S. A.

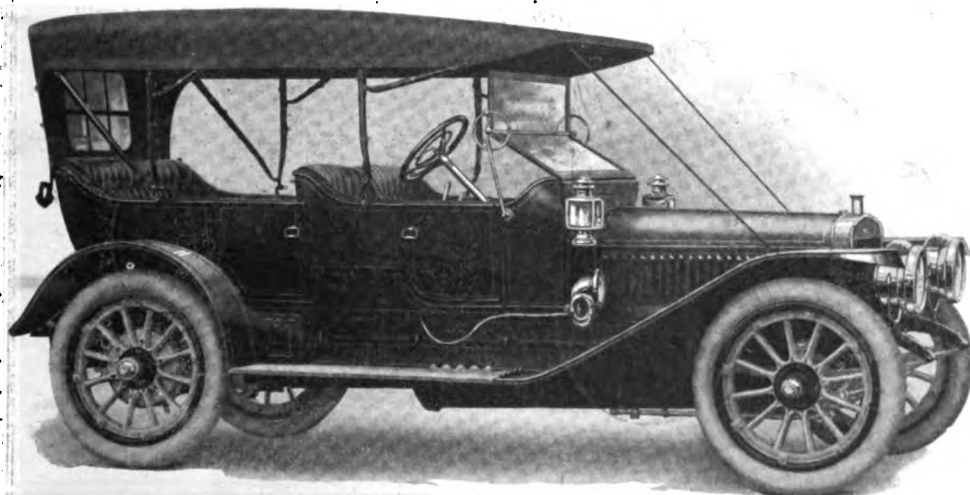
WINTON BRANCH HOUSES

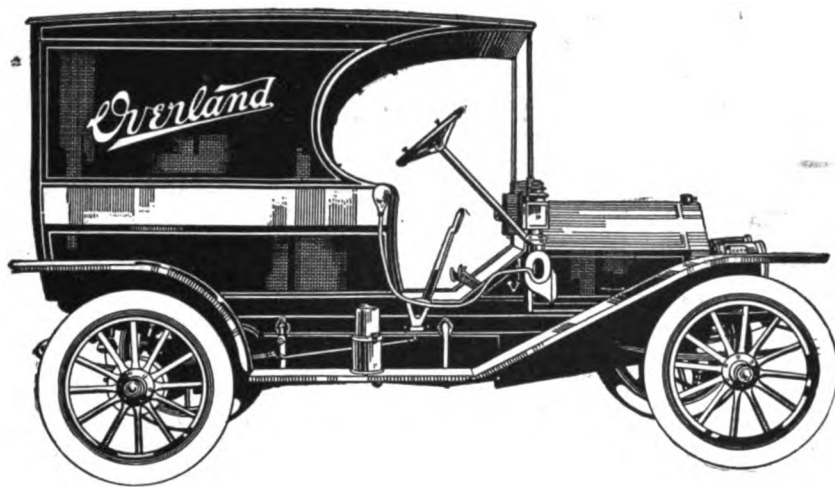
NEW YORK.....Broadway at 70th St.
CHICAGO.....Michigan Avenue at 13th St.
BOSTON.....Berkeley at Stanhope St.
PHILADELPHIA.....246-248 No. Broad St.
BALTIMORE.....209 North Liberty St.
PITTSBURGH.....Baum at Beatty St.
CLEVELAND.....Huron Road at Euclid Ave.
DETROIT.....998 Woodward Ave.
KANSAS CITY.....3328-3330 Main St.
MINNEAPOLIS.....16-22 Eighth St. N.
SAN FRANCISCO.....300 Van Ness Ave.
SEATTLE.....1000-1006 Pike St.

THE WINTON MOTOR CAR. CO.
426 Berea Road, Cleveland, Ohio.

Please send Winton Six literature to

.....
.....





OVERLAND LIGHT DELIVERY WAGON

Horsepower 25
Wheelbase 102 inches

Made with the enclosed
and open express bodies.

Price \$1000

Overland Delivery Cars—Winners of the Government Test

For two years, Overland Delivery Cars—like the ones pictured here—have been used in the Government Mail Service in Indianapolis.

Each one has done the work of three horse-drawn vehicles. Each has covered from 60 to 75 miles daily—winter and summer, rain and snow—without missing a single trip. They have done this for two years and are doing it still.

Recently these cars won the Government test for automobile mail wagons, conducted at Philadelphia. There were entered in this competition practically all other makes of similar automobiles, and the Overland won against all of them.

Of all the myriad uses to which these cars are put the Mail Wagon test is the most severe.

Mail Wagons must make their regular trips, every day of the year, regardless of weather. There have been times in Indianapolis when the snow put a stop to all other traffic, but the Overland Mail Cars made their trips.

Mail wagons must be dependable—must always keep running—for the mails cannot be delayed.

They must cover from 60 to 75 miles daily, making innumerable stops.

They must be simple, so any man can operate them. They must be easy to care for, as the operators are usually novices. They must be practically trouble-proof.

Overland Delivery Cars, for two years, have met all these requirements. They have won against all competition in the Government Mail Wagon test. The cars which have done this are the best possible cars for any delivery purpose.

There are thousands of storekeepers and others who would be using these cars if they knew the facts.

A car which enables one man to do the work of three men and three horse-drawn vehicles is bound to be an economy.

We want to tell you the facts—to show you the cars—to demonstrate what you can do with them. Send for our commercial booklet today.

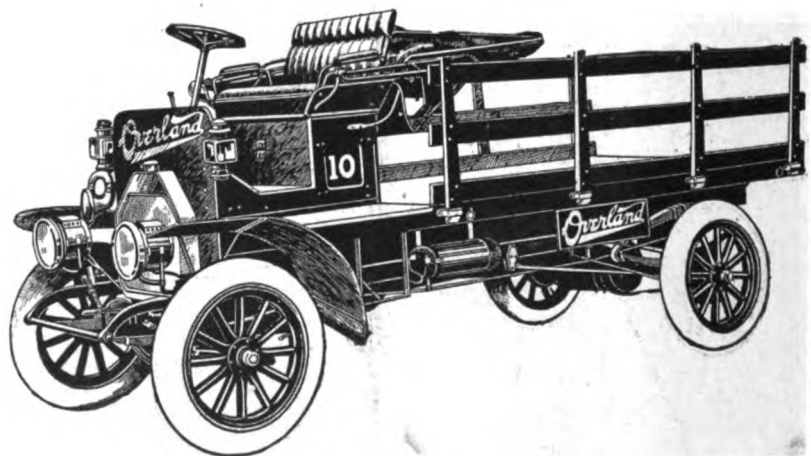
THE WILLYS-OVERLAND COMPANY, Toledo, Ohio, U. S. A.

OVERLAND ONE TON TRUCK

Horsepower 40
Wheelbase 120 inches

Maximum speed 40
miles per hour.

Price \$1500





NEW COMPANY ACQUIRES AMERICAN

Former United States Motor Official Becomes Its President—Another Model and Enlargement in View.

In order to take over and enlarge the properties of the American Motor Car Co., of Indianapolis, the American Motors Co., capitalized at \$1,050,000, was incorporated last week under the laws of Indiana, and has taken possession of the business, assuming all contracts and liabilities of the old concern.

After securing its charter the American Motors Co. completed its organization by electing the following officers: V. A. Longaker, chairman executive board and general manager; J. I. Handley, president; D. S. Menasco, vice-president; J. D. Bright, treasurer, and J. E. Kepperly, secretary.

Mr. Longaker was president of the old company, and Mr. Handley was one of the vice-presidents of the United States Motor Co. The latter's connection with the Indianapolis enterprise probably is its most surprising feature, as it is only about a year since he left Dallas, Tex., where he was the head of the Maxwell-Briscoe-Handley Co., to become affiliated with the United States Motor Co. in New York. It is expected that the combination of Longaker and Handley will result in giving the "American" car a position which it more truly deserves. It is one of the most appealing and compelling big cars on the market, and with added capital and a smaller model, incorporating the underslung frame and other "American" characteristics, which it is broadly intimated is in process of evolution, that very much more will be heard of it is certain. Longaker is styled the "father of the underslung frame," and its increasing prominence is evidence that his faith in it was not misplaced.

Welch Car Ousted For Truck Engines.

The Welch car has been stricken from the list of General Motors' productions, but

as of late years it had ceased to be much of a factor in the business, its discontinuance scarcely will excite much surprise. The Welch factory in Pontiac, Mich., will hereafter be devoted to the manufacture of motors for trucks and A. R. and F. S. Welch will retire from the company bearing their name. W. R. Willett, manager of the General Motors' Marquette plant, has been transferred to the Welch factory, of which he will have charge.

U. S. Tire Co. Locates Headquarters.

Headquarters of the United States Tire Co. are to be established in the Hearst building which occupies the block formed by 57th and 58th streets and Broadway and Eighth avenue, New York, and which overlooks Central Park and Columbus Circle. The company has leased the three upper stories of the building for its general offices, and also the ground floor which will be utilized as the salesroom for Hartford, Morgan & Wright, G & J and Continental tires, for the marketing of which the United States Tire Co. was formed, the news of which first and exclusively was given by the Motor World. The new headquarters will be occupied about March 1, at which time the separate branches of the several manufacturing companies will be discontinued. The United States company has leased also the premises, 1222-24 Michigan avenue, Chicago, which will be occupied by the amalgamated branches and by the offices of the Central District, of which A. I. Philp will be the manager. In Philadelphia the United States branch will be located at the corner of Broad and Carlton streets, that location also having been secured.

Detroit to Be General Motors' Treasurer.

James T. Shaw, active partner in the Detroit brokerage firm of J. S. Lapham & Co., is slated to become treasurer of the General Motors Co., on February 1. The office is at present held by C. R. Hathaway, of New York. It is understood to be but one of several changes in the official make-up of the company which have been decided on, and which probably will be officially announced at the same time.

WEED RENEWS CHAIN GRIP FIGHT

To Press Parsons Patent in Eastern Court and Accepts Unusual Opportunity for Reargument in the West.

Although when the United States Court of Appeals for the Seventh District in Chicago on January 2 decided that the Parsons patent, No. 723,299, covering the Weed tire grip was invalid, the Weed Tire Chain Grip Co. made known that it would seek to carry the matter to the United States Supreme Court, it was not generally thought that anything of the sort would be done. But that the Weed company is far from agreeing with the ruling of the court, and that much more will be heard of the patent has become evident.

The Weed company has not only returned to the attack in the Western Court, but on Tuesday next, 31st inst., the battle will be refought and the merits of the patent again will be gone into before Judge Hand in the United States Circuit Court for the Southern District of New York, which is in New York City, and in which three different judges already have granted six different preliminary injunctions restraining infringers of the Parsons-Weed claims. None of these actions, however, has had a final hearing, although the argument was quite thorough, and although the record in the suit against the Excelsior Supply Co., of Chicago—the one in which the Court of Appeals for the Seventh District rendered its decision adverse to the patent—was put into the evidence and the court was urged to read it. Whether the court did so is doubtful, but as the case, which will come up on Tuesday next, is in the nature of a final hearing on an application for a permanent injunction, the argument will be wide open, and all the ground covered in the Excelsior case in the West will be retraced here. The defendant in the action is the E. J. Willis Co., of New York, which is charged with infringement of the Parsons patent by engaging in the purchase and

sale of so-called Whittaker tire chain grips.

While the Court of Appeals' decision in the Excelsior case is binding in all circuits insofar as it applies to the Excelsior product, the Zigzag grip, it transpires that all other grips still are open to attack. The idea that the rulings of a court of appeals for one circuit are accepted by the courts of appeal for other circuits will be combated in the Willis action, the Weed counsel having compiled numerous citations to indicate that even these higher courts have held differing opinions on the same subjects.

The argument in the Willis suit will scarcely have been concluded when, on February 2, the fight will be reopened in Chicago, and the Weed attorneys will attempt to convince the judges of the Court of Appeals for the Seventh Circuit that they erred in their judgment in the Excelsior matter. It appears that on the very day, January 2, the Excelsior action was decided, an appeal of the Pitts Chain Grip Co., of Chicago, from a preliminary injunction obtained by the Weed company, was due to be argued; in view of its decision in the Excelsior case, however, the court suggested that argument in the Pitts proceeding was unnecessary, and accordingly reserved the case for further disposition. Later the Weed attorneys gave notice of a proposed petition for a rehearing of the Excelsior appeal, and also asked that the Pitts appeal be assigned for oral argument. The Pitts counsel opposed such proceedings as applying to themselves, holding that in effect they would amount to a reargument of the Excelsior case. Weed's representatives admitted that such would be the case, but urged the propriety of oral argument of the point on which the court had held the Parsons patent to be invalid, namely, the priority of the Maxim & Bardwell patent, No. 681,173, which applied to leather straps secured to a wheel.

The court seemed ready to be convinced of any error or oversight it may have committed, and accordingly directed that the Pitts appeal be set for oral argument on Thursday, February 2. Meanwhile, the formal petition for a rehearing of the Excelsior case has been filed by the Weed counsel, Frederick S. Duncan, of New York, and Edward Rector, of Chicago.

A peculiar phase of the situation is that Hiram P. Maxim, co-inventor with Bardwell, has practically repudiated their joint patent. He has issued a statement that he believes the court erred, as he at no time had such ideas in mind as are contained in the Parsons' patent.

Tool Company Takes Section Gang Car.

The Chicago Pneumatic Tool Co., of Chicago, has purchased the Rockford Motor Car Co., of Rockford, Ill., whose principal production was a railroad section gang car propelled by a gasoline engine. The Tool company now will manufacture these cars in connection with its Little Giant trucks.

TO ADVANCE ELECTRIC LIGHTING

Makers of Generators Meet and Take Step Toward Standardization—Composite Drawing to be Evolved.

Due to the increasing use and demand for electric lighting systems, five of the manufacturers of such apparatus seized the opportunity afforded by their collective appearance at the Madison Square Garden show last week to get together and formulate plans that cannot well fail to further extend the use by rendering easier the installation of their systems. As it is at present, each manufacturer has his own standards of sizes and mountings, and as a result the equipment of an automobile with an electric lighting outfit is a tedious and intricate task which many car makers prefer to avoid.

While last week's meeting was in the nature of an informal conference, it is not unlikely that a permanent organization may grow out of it and, despite its informality, a long step toward standardization, the five manufacturers represented supplying the general dimensions of their respective lighting machines and agreeing that from them shall be made a composite drawing which will be sent to automobile manufacturers with the request that they provide brackets conforming to the composite dimensions; this work is now in hand and will cover a standard of sizes, speeds and mountings.

Those present at the meeting last week were as follows: William Gray, Alex. Churchward and Alden R. McMurtry, of the Gray & Davis Co.; F. A. Williard and F. S. Gassaway, of the Williard Storage Battery Co.; V. T. Apple, of the Apple Electric Co.; Martin Geiszler, Jr., of the Geiszler Bros. Storage Battery Co., and D. J. Burns, of the Ward Leonard Electric Co.

Parry Plant Bought by New Company.

Following the public sale of the plant of the bankrupt Parry Automobile Co., of Indianapolis, the property has been taken over by the Motor Car Mfg. Co., which was organized for the purpose under the laws of Indiana, with capital stock of \$75,000. W. C. Teasdale, Jr., formerly vice-president of the Parry company, is president of the new corporation; Guy O. Simons, previously connected with the Stoddard-Dayton factory, is vice-president and superintendent, and W. K. Bromley, an Indianapolis real estate man, is secretary. Fred C. Dorn, secretary of the American Ball Bearing Co., of Cleveland, and Frank H. Teagle, a Cleveland oil man, are the other directors. The factory will at once resume operation, an output of 1,000 cars being contemplated. The Parry company failed on December 3 last, with liabilities approximating \$250,000, and as the sale of the plant netted but

\$50,000, it is not likely that the creditors will receive any very considerable return.

Changes Among Prominent Tradesmen.

Charles S. Crawford, factory manager of the Westcott Motor Car Co., of Richmond, Ind., has resigned that position to fill the similar place in the Cole Motor Car Co., of Indianapolis.

L. E. Smith, who for years has been connected with Billings & Spencer Co., of Hartford, Conn., will, on March 1, join the traveling force of Claire L. Barnes & Co. He will represent the latter firm in New England territory.

E. V. Stratton, manager of the Studebaker branch in Philadelphia, has resigned that office to become sales manager for J. A. P. Ketchum, of Albany, N. Y., who has the Packard agency for seven counties in that part of New York state. The change becomes effective February 1st.

A. A. Gloetzner, formerly production manager of the Owen Motor Car Co., of Detroit, has been engaged as factory superintendent of the Krit Motor Car Co., of that city. H. H. Crawford, former purchasing agent of the Weston-Mott company, of Flint, Mich., also has joined the Krit staff, and will have charge of its purchasing department.

Kirby Makes Wagon With Tubular Frame.

The Kirby Motor Car Co., of Detroit, which was incorporated last week with capital stock of \$300,000, purposes producing a light delivery wagon of 12 horsepower which will be distinguished by a tubular frame and planetary transmission. Frank A. Kirby, Mark W. Allen, Walter G. May, George W. Platt and W. F. Porter are the principal stockholders in the company.

Krit Moving to Much Larger Factory.

The Krit Motor Car Co., of Detroit, has acquired the factory at Lieb and Wright streets, in that city, which was vacated by the Owen Motor Car Co., when the latter was absorbed by the Reo Motor Car Co. The Krit machinery and equipment already is being removed to the new place, which is three times the size of the former Krit factory.

New Jobbing House Opens in Chicago.

The Gottschall & Bailey Sales Co. has entered the jobbing trade in Chicago and "opened up" at 1254 Michigan avenue. It will handle all manner of tires and accessories and reach out for business on a national scale.

Adams to Resume Operations in Findlay.

Adams Bros. & Co., who built six cars in Cleveland, Ohio, are dismantling their plant and removing it to Findlay, Ohio, where it is planned to resume operations on a more extended scale. Of the six cars that were built, four were trucks.

BOTH IGNITES AND ILLUMINATES

Radical Two-in-One Device Makes Its Appearance in Indianapolis—Company Formed for Its Manufacture.

There was organized in Indianapolis last week the Electro Lighting Co., having for its object the manufacture and marketing of a device which, if the claims made for it are substantiated, cannot well fail to set both the ignition and illuminating trades by the ears. The Delano generator, as it is styled, is intended not only to supply current for electric car lighting purposes, but for ignition also. Thereby, as its inventor, one J. K. Delano, Jr., is prompt to indicate, it solves at one stroke the big problem which the makers of electric lighting dynamos at present are seeking to solve, for as it replaces the standard type of magneto, the Delano generator can be mounted without difficulty on almost any car now on the market.

The new generator is designed to be direct connected to the automobile engine and to run at crankshaft speed. Its regulation is accomplished by electrical means entirely, no mechanical or electro-mechanical governing devices being employed in its construction. The system is worked out in such a way as to graduate the change of the battery, which is used in connection with the apparatus, in such a way as to give the correct "taper charge," or diminishing current as the battery approaches its full capacity. To protect the battery from improper discharging a "reverse current, self-restoring" circuit breaker is introduced between the battery and the generator, which prevents current being drawn from the former when the engine is at rest except as may be required for lighting. While the details of the ignition end of the system are not disclosed, it is said to yield "a true high-tension magneto spark." The lighting portion of the system, however, is of low voltage, and takes the standard form of tungsten lamp.

The Electro Lighting Co., which is a \$100,000 corporation, has opened headquarters at 202-205 Board of Trade building, Indianapolis. The officers are: S. C. Renick, president; Charles C. Wedding, vice-president; Joseph E. Bell, secretary and treasurer, and W. H. Harbison, assistant secretary. The first of the dynamos and coils will be built under contract by a local manufacturing concern, though the project is entertained of obtaining a permanent manufacturing location ultimately.

Petrel Erecting a Huge New Plant.

The Petrel Motor Car Co., of Milwaukee, Wis., which, since its acquirement by the wealthy Filer & Stowell interests, has taken on solidity and importance that previously

it did not possess, has commenced work on a big new factory in South Milwaukee. The structure will be three stories, 400 x 250 feet, and will be distinguished by a glass roof; it will afford 140,000 square feet of floor space, an interior balcony adding 40,000 feet to the general dimensions. A railroad siding and a traveling steel crane are among the several conveniences. It is expected that the plant will be ready for occupancy by March 1. The immediate direction of the Petrel company's affairs now rests with George Bailey, sales manager; W. O'Neil, superintendent board of engineers; H. Penner, purchasing agent, and O. L. Green, office manager. The range of production has been increased until the Petrel line now embraces seven models listing at from \$850 to \$1,600 and includes both runabout and touring car types.

"Frozen Out" of Company, Georgian Sues.

Although the Dixie Flyer Automobile Mfg. Co., of Atlanta, Ga., has never cut much of a figure in the industry, a somewhat unusual suit filed by A. L. Green against M. C. Morris, both of Atlanta, discloses that its stock is above par. Green alleges that Morris prevented him from participating in the organization of the company and also blocked a deal for a block of its stock which Green sought to purchase. Accordingly he believes he has been damaged to the extent of \$13,500, which sum he asks the court to compel Morris to disgorge.

Flanders Adds to Board of Directors.

Charles F. Splitdorf, of New York, and Charles L. Palms, of Detroit, have been added to the directorate of the Flanders Mfg. Co., which last week took over the Grant & Woods Mfg. Co., of Chelsea, Mich., and the four Flanders properties in Pontiac, Mich. At the same meeting, at which the number of directors thus was increased, stock in the Flanders company to the value of \$100,000 was set aside to be earned by the heads of the various departments.

Faw Hangs Out His Own Shingle.

J. H. Faw, who for two years was assistant manager of the Motor Car Equipment Co., and who later managed the automobile department of the Manhattan Electrical Supply Co., has set up in business for himself at 41 Warren street, New York. He has the sales agency for a number of accessories and expects to add several similar accounts.

Canadian Carriage Makers Add Cars.

The Matthew Guy Carriage & Automobile Co., of Oshawa, Ont., the outgrowth of the long-established carriage business of that name, has been incorporated with \$250,000 capital stock. It will produce a 30 horsepower touring car and a one-ton truck, and expects to begin deliveries of the former at least late in February.

NEW YORK SHOW BROKE RECORD

Attendance During Part I Averaged 25,000 Daily—Part II Smaller, of Course, but Truck Exhibitors Satisfied.

All records for attendance were broken by the Association of Licensed Automobile Manufacturers' show, which closed last Saturday after having run for two weeks at Madison Square Garden, New York City. During the first week 173,221 persons attended the show, exclusive of attendants, exhibitors and pressmen, of whom there were about 3,000 daily. The average thus exceeded 25,000 each day. Due to outstanding of trade tickets the figures for the second week have not yet been ascertained definitely, but the count taken so far indicates a daily average of between 10,000 and 11,000. Good business or encouraging prospects was the fairly general report of those who exhibited in Part I, and though many of the parts and accessory makers who remained for Part II—"truck week"—complained that there then was practically "nothing doing," most of the truck exhibitors fairly glowed with satisfaction. One of the most gratifying and suggestive facts is the remarkable readiness with which representative business men all over the East who have much hauling to do, and heads of delivery departments accepted the invitations which had been sent out by the show committee for the second week of the show. Fully 8,000 of these invitation cards were honored, signed with the name and business of the recipient, showing the immense interest manifested by business men in the display of motor trucks.

Bankruptcy Petition Against Top Makers.

On Tuesday last, 24th inst., a petition in bankruptcy was filed against the J. E. De Mar Co., manufacturers of automobile tops, at No. 304 West 49th street, New York. It was alleged that the company is insolvent, permitted three creditors to obtain judgments for \$358, and on January 10 gave a bill of sale on some machinery to the W. A. Woods company. Assets are estimated at \$21,000. The company was incorporated in 1907, with capital stock \$15,000, which was afterward increased to \$50,000. J. Edward De Mar is president. After hearing the argument, Judge Holt yesterday (Wednesday) appointed Robert C. Morris receiver under bond of \$10,000.

Motsinger Leaves Pendleton for Lafayette.

The Motsinger Device Co., makers of the Motsinger magneto and other ignition appliances, is this week removing from Pendleton, Ind., to Lafayette, Ind. Its office in the latter city already has been opened and the machinery is being installed in the factory.

THE WEEK'S INCORPORATIONS.

Coldwater, Mich.—Boucher & Moore Auto Co., under Michigan laws, with \$2,000 capital.

Independence, Mo.—J. W. Kerr Auto Co., under Missouri laws, with \$2,000 capital. Corporators—Ford Douthitt, J. W. Kerr, N. Douthitt.

Kewaunee, Ill.—Matheson Automobile Co., under Illinois laws, with \$15,000 capital. Corporators—N. Matheson, L. V. Matheson, F. H. Ryan.

Denver, Colo.—F. A. Trinkle Automobile Co., under Colorado laws, with \$20,000 capital. Corporators—F. A. Trinkle, J. A. Pierce, S. A. Cover.

Indianapolis, Ind.—Finch-Freeman Auto Co., under Indiana laws, with \$15,000 capital. Corporators—W. B. Anderson, H. M. Freeman, J. O. Finch.

Milwaukee, Wis.—Stegeman Motor Car Co., under Wisconsin laws, with \$40,000 capital. Corporators—O. Stegeman, J. C. Millman, W. Stegeman.

Detroit, Mich.—Bauer Metal Body Co., under Michigan laws, with \$150,000 capital. Corporators—Charles W. Rosenberg, Milton C. Hirschfield and others.

New Orleans, La.—Segari-Clarke Auto Co., under Louisiana laws, with \$10,000 capital; to deal in automobiles. Corporators—S. Segari, J. J. Clarke, Louis Segari.

Los Angeles, Cal.—Auto & Vehicle Spring Co., under California laws, with \$50,000 capital. Corporators—W. H. Smith, H. E. Finkenbinder, Fred T. Hughes.

Chicago, Ill.—Hoeft & Co., Inc., under Illinois laws, with \$20,000 capital; to deal in tires and other rubber goods. Corporators—F. Dickson, I. J. Solomon, Edward Lawler.

St. Louis, Mo.—Franklin Automobile Co., a corporation of the State of New York, admitted to do business in Missouri. New York capital, \$400,000; St. Louis capital, \$23,000.

Louisville, Ky.—Auto & Taxicab Co., under Kentucky laws, with \$50,000 capital; to do general passenger carrying business. Corporators—C. J. Cannon, W. F. Glenn, L. W. Place.

Kansas City, Mo.—United States Motor Co. of Kansas City, under Missouri laws, with \$2,000 capital. Corporators—W. S. Hathaway, Frank R. Tane, G. W. Jones and others.

Waukesha, Wis.—Nyberg-Waukesha Auto Co., under Wisconsin laws, with \$5,000 capital; to deal in motor vehicles. Corporators—Ward S. Bunker, Robert S. Coffin, W. R. Calkins.

Evansville, Ind.—Advance Auto & Machinery Co., under Indiana laws, with \$10,000 capital; to manufacture, buy and sell automobiles. Corporators—Henry Kollker, Walter Wheeler, John Diers.

Louisville, Ky.—Auto & Taxicab Co., un-

der Kentucky laws, with \$50,000 capital; to manage a garage and motor livery service. Corporators—C. J. Cannon, L. W. Place, W. F. Glenn.

Cincinnati, Ohio—Atlas Auto & Supply Co., under Ohio laws, with \$10,000 capital. Corporators—H. A. Welland, Fred S. Paul, Hans Richard, Harold B. Gibbs, F. B. Williams, A. G. Werling.

Chicago, Ill.—Apollo Automobile Co., under Illinois laws, with \$15,000 capital; to deal in automobiles and other motor vehicles. Corporators—John Larson, George Ostrander, Solomon R. Clute.

Union Hill, N. J.—Hentschel-Kemter Tire Co., under New Jersey laws, with \$100,000 capital; to manufacture rubber tires. Corporators—Paul J. Kemter, Arthur W. Hentschel, Cuthbert L. Gillespie.

Nashville, Tenn.—Brown Automobile Connection Co., under Tennessee laws, with \$50,000 capital. Corporators—M. A. Brown, W. H. Meachem, A. W. Boyd, A. L. Kirkpatrick, E. L. Whitaker.

Worcester, Mass.—C. E. Dustin Co., under Massachusetts laws, with \$6,000 capital; to deal in automobiles and supplies. Corporators—Charles E. Dustin, Samuel T. Hobbs, Clarence W. Hobbs, Jr.

Indianapolis, Ind.—Hardegan Axle Co., under Indiana laws, with \$10,000 capital; to manufacture and sell automobiles and parts thereof. Corporators—E. C. Hardegan, C. W. Lauer, Hermann Wetzel.

Moline, Ill.—Velie Engineering Co., under Illinois laws, with \$200,000 capital; to manufacture and sell engines, motors, automobiles, etc. Corporators—Willard L. Velie, Lawson M. Fuller, Otis E. Mansur.

Boston, Mass.—McKae Mfg. Co., under Massachusetts laws, with \$100,000 capital; to manufacture and deal in accessories. Corporators—Robert M. Currier, Charles R. Currier, John McGregor, Julius H. Kaeson.

Detroit, Mich.—Marsh Trussed Pneumatic Tire Co., under Michigan laws, with \$30,000 capital; to manufacture automobile tires. Corporators—George L. Fleitz, Francis T. Dyer, Elon A. Marsh and others.

Des Moines, Ia.—Keystone Automobile & Supply Co., under Iowa laws, with \$10,000 capital; to deal in automobile accessories. Corporators—John B. Gibson, M. A. Gibson, Vere W. Reynolds, August Gronan.

Denver, Colo.—Auto Hire Co., under Colorado laws, with \$10,000 capital; to maintain an automobile livery service and deal in automobiles. Corporators—R. E. Oakes, A. H. DeGuston, Homer Elliott, H. D. Carlton.

Buffalo, N. Y.—Cataract Rubber Co., under New York laws, with \$500,000 capital; to deal in tires, rubber and rubber articles. Corporators—H. A. Jaynes, H. V. Cook, of New York City; J. N. Mahoney, of Buffalo.

Willimantic, Conn.—Chesbro Automobile

Co., under Connecticut laws, with \$10,000 capital; to deal in automobiles and maintain a garage. Corporators—E. P. Chesbro, E. P. Chesbro, Jr.; Mrs. E. P. Chesbro, Laura Chesbro.

St. Louis, Mo.—Auto Tire Maintenance & Supply Co., under Missouri laws, with \$3,000 capital, fully paid up; to manufacture and deal in automobile supplies. Corporators—L. Moller, W. E. Chapman and others.

New York City, N. Y.—Klenke Pneumatic Suspension Co., under New York laws, with \$150,000 capital; to manufacture and repair vehicles, cars, engines. Corporators—W. H. Klenke, T. A. Klenke, M. S. Brown.

Charleston, S. C.—Gregory-Condor Motor Co., under South Carolina laws, with \$20,000 capital; to do a general automobile business. Corporators—W. T. Gregory, W. S. Hough, J. M. Bates, J. W. Condor, J. J. Harper, A. J. Gregory.

Cleveland, Ohio—Manufacturers' and Dealers' Automobile Exhibition Co., under Ohio laws, with \$500 capital; to conduct automobile exhibitions. Corporators—Ray M. Colwell, W. S. Fitzgerald, John S. Stockwell, R. M. Hard, H. E. Parsons.

Providence, R. I.—Rhode Island Automobile Dealers' Association, under Rhode Island laws, without capital; to encourage scientific, social and sporting interest of the trade. Corporators—Guy B. Tillinghast, Herbert E. Bradford, Emile E. Sontag, Charles H. Goodwin, Charles E. Thatcher.

Waterloo, Ia.—Dart Manufacturing Co., under Iowa laws, with \$125,000 capital; to manufacture motor trucks and wagons. Officers—C. A. Helen, president and general manager; A. H. Weidohoff, vice-president and superintendent; Thomas H. Mars, secretary and sales manager; C. C. Butler, treasurer.

Increases of Capital.

Akron, Ohio—Portage Rubber Co., from \$10,000 to \$1,000,000.

Houston, Tex.—Brown-Woods Electric Co., from \$10,000 to \$15,000.

Louisville, Ky.—Marshall-Clark Motor Car Co., from \$20,000 to \$30,000.

Louisville, Ky.—Marshall-Clark Motor Car Co., from \$20,000 to \$30,000.

Chicago, Ill.—Factory Auto Supply Co., from \$10,000 to \$25,000, and changes name to American Tire & Rubber Co.

Recent Losses by Fire.

Bloomfield, Ia.—Steckel's garage and contents burned; loss, \$7,500.

Brooklyn, N. Y.—H. W. Johns-Manville Co., storage house burned; loss, \$300.

Chicago, Ill.—Shaw Taxicab Co., garage damaged, one taxicab burned; loss, \$1,000.

Brooklyn, N. Y.—Pioneer Garage, 23 Cranberry street, and several cars burned; loss, \$30,000.

IN THE RETAIL WORLD.

A new garage just has been opened by J. A. O'Leary at Marengo, Ia.

Samuel Fish and William Lauck have opened a garage at Spencer, Ia.

K. D. Seeberger and G. D. Harris have opened a salesroom and garage at Creston, Ia.

Frank Leichtman has purchased the business of Imholt & Remker, at New Hampton, Ia.

Swenby & Hall is the style of a new firm which just has started in business at Baldwin, Wis.

P. J. Murray has established a garage at 232 and 234 Allen street, Albany, N. Y. It will be styled the Circle Garage.

At a cost of \$8,000 a garage is being built at Cumminsville, Ohio. It will be occupied by the Hellman Motor Car Co.

Andrew Heim has opened a garage at Marinette, Wis. He will deal in second-hand cars and operate a renting service.

H. L. Center, who dealt in second-hand cars in Salina, Kans., has disposed of his entire stock at private sale, and gone out of business.

The Modesto Garage is the style of a garage which just has been opened on J street, Modesto, Cal. Charles Russell is the manager.

Burroughs & Wohlgemut have opened a garage at 186 Fourth avenue, Columbus, Ohio. It is built of cement blocks and is fireproof.

The H. E. Ross Electric Co. has opened a garage and salesroom at 525 West Second street, Moline, Ill. The Ohio electric will be handled.

William Botto has opened a salesroom at the corner of 52d street and Broadway, New York City, N. Y. He will handle Kissel trucks.

The Canadian Automobile Co., of Montreal, Canada, has opened new salesrooms at 182 Peel street. Cadillac, Pierce and Stearns cars will be shown.

Although it is but a mere dot on the map, Maquoketa, Ia., is to have another garage. Edward Chipman and Ross Doran are responsible for the enterprise.

J. E. Johnson and T. W. Wootin have opened a garage on West Forsyth street, Jacksonville, Fla. It will be operated under the style the Central Garage.

Richard Brockmann has been appointed receiver of the garage business of Laurence Kirschbaum, Brookville, Ind. The liabilities are \$15,000, and the assets \$12,000.

George R. Wunderlich, of David City, Neb., has purchased the property of C. V. Toevs and others, at 2346 O street, Lincoln, Neb., on which he is erecting a garage.

George W. Largess, doing business as the Belmont Auto Co., in Worcester, Mass., has filed a petition in voluntary bankruptcy.

His liabilities are \$12,550, and his assets \$426.

Edgar E. Messersmith, of Buffalo, N. Y., has opened an agency for Lexington cars at 329 Elmwood avenue. His territory includes Western New York and Pennsylvania.

The Perth Amboy Tire Co. has commenced business at 44 Smith street, Perth Amboy, N. J. William S. Barlow is the manager of the concern, which will do a retail business.

H. O. Page and J. F. Wallach, Jr., have formed a partnership and opened a garage and salesrooms at 121 West First street, Oklahoma City, Okla. They will handle the Lion car.

Z. E. Scofield and R. B. Barnes have dissolved their partnership, Barnes buying out his partner and continuing the business in his own name. The garage is located in Bay City, Texas.

De Tamble and McFarlan cars will form the stock in trade of the new firm of Uhl & Wheeler, who just have opened up in Dallas, Tex. They have located at 1305 Commerce street.

Under the management of J. N. Burge, the Simplex Pacific Coast Agency has been opened in San Francisco, Cal., at 124-128 Van Ness avenue. Simplex cars will be handled exclusively.

William A. Giraldin and Dillon T. Stevens, both of St. Louis, Mo., have formed a partnership under the style Giraldin & Stevens, and opened a store at 4137 Olive street. They will handle accessories only.

The Bricker Motor Car Co. has been formed in Los Angeles, Cal., with W. J. Bricker as president, and headquarters in South Flower street. The company will handle the Croxton-Keeton and Nance cars.

The Standard Automobile Co., of Houston, Tex., against which a petition in bankruptcy had been filed, has reached an amicable agreement with its creditors. The petition accordingly has been dismissed and the business will be continued.

Under the style the Premier Sales Co., a salesroom for Premier cars has been opened at 312 North Delaware street, Indianapolis, Ind. President Harold O. Smith, the president of the company, will make his headquarters at the new offices.

Work on what is heralded as the largest garage in the world just has been started at Milwaukee, Wis., by the Kopmeier Motor Car Co., agents for the Chalmers-Detroit and the Detroit Electric cars. It will occupy an entire city block at 373-389 Summit avenue.

The Auto & Taxicab Co. has just been formed in Louisville, Ky., and will engage in general passenger traffic. It is under the management of C. J. Cannon. Its temporary headquarters are at the garage of the United Auto Co., in Third avenue, pending the com-

pletion of a new building which is in course of construction.

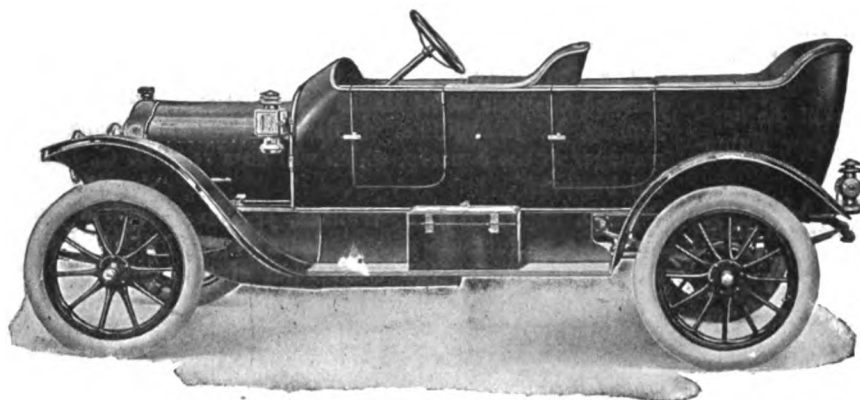
J. C. Luke and J. W. Paulk have formed a company under the style the Ohio Sales Co. of Georgia, and opened salesrooms at Ocilla, Ga., taking over the business of the Georgia Automobile Co., of the same city. As the name indicates, they will deal in Ohio cars.

Frank G. Fickling & Co., of Washington, D. C., have incorporated their business under the laws of the District of Columbia with a capital stock of \$20,000. The new style of the concern is the Frank G. Fickling Co., Inc., which will continue to deal in supplies and accessories.

Incorporated under the laws of Colorado, the Marksheffel Motor Co. has taken over the business of the Colorado Springs Automobile & Supply Co., of Colorado Springs. A. W. Marksheffel is the president and general manager of the concern, whose headquarters are at 122 North Cascade avenue.

Jervis Passes to the "Great Beyond."

Arthur N. Jervis, advertising manager of the American Locomotive Co.'s automobile department, and one of the earliest workers in the automobile vineyard, died on Monday morning last, 23d inst., in his apartment in the Hotel Carlton, New York. He was in his 46th year. Jervis had been in failing health for some time, and a heavy cold which developed into pneumonia found him without much power of resistance. As a matter of fact, five years ago his physician gave him but 30 days to live, but he surprised the doctor, and grew strong and stout. Jervis was a graduate of the New York Sun. For years he was in charge of the paper's bicycle column, which gradually was transformed into an automobile department—probably the first one maintained by a daily paper. Later Jervis became a member of the Motor World's staff, and still later he set up an advertising and publicity bureau of his own. He served the Association of Licensed Automobile Manufacturers for a year or so, and did work for many others prominent in the industry until about three years ago, when he engaged with the American Locomotive Co. Jervis usually was present wherever there were important goings-on, and he knew how to "cover" them. He was a versatile writer, was widely known and well liked, and a big heart and easy-going nature helped to prevent him from accumulating a comfortable competence that often was within his grasp and always within reach of his abilities. He was a member of an old Long Island family, and is survived by his mother and a sister and by two step-daughters whom he reared to young womanhood. His funeral services, conducted in the Stephen Merritt Chapel Tuesday evening, were attend by a notable gathering of newspaper men and men identified with both the bicycle and automobile movements.



Why Pay More?

EXPERTS say that it is impossible to build a better auto than the White Gasoline car — they could be built larger, but no better. The size of the White car is very favorable for most uses — it has five-passenger capacity. Being moderate of size and weight, it is economical upon tires and other accessories. Having a long-stroke engine with but moderate-sized cylinders, it is economical in the use of gasoline. Being mechanically perfect and economical in operation it is moderate-priced, and leaves no occasion to pay more.

Why Pay Less?

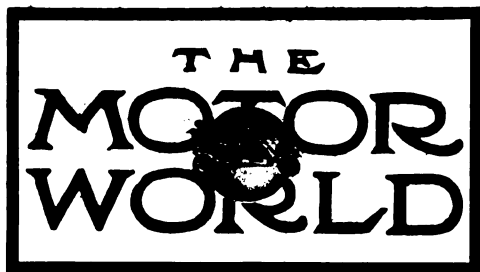
The original analysis of the cost of an automobile is not the original outlay for the car but the monthly outlay for up-keep. Judged by this standard, the White car is the cheapest car on the market, being a car that must most surely be economical in operation. The monthly bills for up-keep continue as long as the car lasts — the original investment comes but once.

The economical White Gasoline car is the car for men who need to consider maintenance cost.

Many agencies now open for White Gasoline cars and truck, also steam passenger cars. Demonstrators should be bought at once for early delivery.


The White Company

830 East 79th Street, Cleveland



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To Facilitate Matters All Communications
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NEW YORK, JANUARY 26, 1911.

Let the New York Law Alone!

While it undoubtedly will irritate the gentleman of the National Highways Protective Society, for instance, and is in the nature of stealing thunder which helps attract contributions to his coffer, it is far more fitting that the amendment to the New York law which seeks to require owners of automobiles to undergo examination and secure licenses to use their property should come from someone or something bearing such a title as "Chauffeurs' Federation of America." The unknown and mysterious Utica organization employing that name, which has performed the service and formulated the amendment, at least appears to have justification for its action. Such a measure, if enacted, would create more jobs for chauffeurs, and for what better purpose can a chauffeurs' federation or union exist? And if an owner will persist in driving his own car, why should not he be termed a chauffeur, as Utica's "Federation of America" suggests? Thereby he will be rendered

eligible to membership in the "federation," and it thus may become a power in the land, or at any rate, in Albany, which practically is next door to Utica.

If there were lacking real reasons why owners should be compelled to pay for the right to use their property or why men should not purchase motor cars unless they are able to employ chauffeurs, the "federation" happily has supplied them.

They are reasons that will appeal strongly to even the combined "auto editor" and advertising solicitor of the New York Globe, who also wants owners to be examined and licensed. Why? Because "it is the inexperienced owner who oft-times runs amuck and blames it on his chauffeur who is unjustly fined or sent to jail." The "auto editor" himself says so. He undoubtedly could reel off a long list of owners who have done that sort of thing, and of chauffeurs who willingly have played the part of martyrs! There is not one who would not gladly pay fines or go to jail for his "boss's" sake and his "boss's" sins! Unlike the rest of mankind, chauffeurs are built that way! And, of course, it is the "inexperienced owner" able to afford a chauffeur who will go to jail for him that sits at the steering wheel and "runs amuck." He pays the chauffeur merely for the pleasure of his company! It therefore follows that such owners should be required to obtain licenses! Men who cannot afford to pay chauffeurs for sitting beside them have no right to purchase cars. Or is it possible that they do not "run amuck?"

In making plain these very self-evident facts, the Globe's "auto editor," who receives \$75+ per month for peddling New Jersey licenses in New York, and who also sells straps for holding the tags, further declares with proper emphasis that the Callan law should be "torn to tatters." Why? Because a New Yorker writes him that he has been fined not once, but several times, for speeding, and has discovered that the fines he paid were not turned into the State treasury! They made the same discovery in New Jersey—but no matter! Although convincing, there is another reason why the Callan law should be "torn to tatters" and scattered to the four winds. Why? Because the "auto editor," etc., thinks it outrageous that a New Yorker should be able to get a New Jersey license in ten minutes, while it sometimes takes him two or three weeks to get a New York tag. This sort of thing makes New Yorkers have

"much more respect for the New Jersey law than for the Callan law." Therefore tear up the Callan law—tear it to tatters! Then draw up a new one establishing bargain counters for New York licenses; and as men of experience can as easily peddle the licenses of two states as of one, such men should be placed in charge of the counters! The Callan law then will be absolutely perfect; nothing more will be necessary.

There are quite a few people, however, who, realizing that the Callan law is less than six months old, favor leaving it alone until it has had a fair trial. There is no real need or crying demand for tinkering it at this time. In great measure, it represents the ripe experience of some 12 years with more automobiles operated under more varied and trying conditions than exist in any other part of the country. The concrete expression of such experience is worth a thorough trying out before "tearing it to tatters" or applying miscellaneous patchwork.

The Rating of Commercial Vehicles.

Manufacturers of commercial vehicles are about to face one of the most serious problems, if not the most serious, with which they ever have had to contend; indeed, one of the most serious which they ever will be called upon to consider, inasmuch as it involves the marshaling of their product under fixed and definite standards to which they must be thoroughly adapted. That problem is the problem of rating.

The situation in respect to the rating of commercial cars is entirely different from that which obtains in the other end of the industry. The rating of pleasure cars is confined to horsepower and passenger capacity. Horsepower is a term which has little real meaning in itself, and which really is significant only when interpreted in connection with a thorough knowledge of weight, gear ratio, engine and car speeds and even such apparently remote qualities as body design, balance and suspension. In the case of the commercial vehicle, however, the purchaser invests in a machine which is intended to perform a definite amount of work—work that is measurable in terms of weight and distance. Presumably he is able to define his requirement pretty accurately, and presumably he is willing to invest only in such equipment as is thoroughly suited to his needs.

But that is just the difficulty. The average

motor truck buyer is not as well posted on his own needs as he should be, and what is even worse, he is prone to load the vehicle to its utmost capacity a good deal of the time. He is accustomed to loading his horse trucks as heavily as they can be loaded and moved. He is apt to pursue the same simple plan with his trucks, and when they begin to show signs of wear or to break down, he promptly blames the manufacturer. Overloading thus has come to be one of the most prevalent evils with which the manufacturer has to contend.

Plainly the remedy lies in the question of rating. Even so, if the maker sells his product with a guaranteed 50 per cent. overload capacity, it is evident that the owner is liable to consider its real capacity as 50 per cent. over the nominal amount. Over-rating thus is pretty likely to defeat the very object it is intended to serve. Even the placing of a safe load label on each machine and limiting all guarantees to service within that limit obviously cannot be expected to prove wholly satisfactory unless the maker allows very wide margins of safety, perhaps even secretly. But at that there is some chance that the user will not equip himself according to his real needs, and so will be forced to overload in order to carry on his normal work.

Probably the wisest plan is that which already has been adopted by one far-seeing manufacturer, who practically has abolished the rating question, and sells his product only after he has thoroughly familiarized himself with the conditions under which it is to be used. After determining the size of the average loads to be transported in the regular run of the customer's business, he sells him an equipment composed of machines which are suited to that class of work. That is another way of saying that the manufacturer in question is capable of producing a wide variety of types, or—which amounts to the same thing in this case—that his product is so closely standardized and so thoroughly interchangeable that it is possible to produce a considerable variety of machines by suitably combining wheels, frames, bodies, motors and transmissions. This comes pretty close to building special machines for each job, but it eliminates for all time the risks which arise from placing too much dependence on rating and letting the buyer determine his own requirements in the vehicular line. In the long run it means satisfaction for the

COMING EVENTS

January 25-28, St. Paul, Minn.—First annual show of automobile dealers in Auditorium.

January 27-February 4, Vancouver, B. C.—First annual show.

January 28-February 4, Chicago, Ill.—National Association of Automobile Manufacturers' tenth annual national show in Coliseum. Pleasure cars and accessories only.

January 28-29, Oakland, Cal.—Racemeet on Oakland motordrome.

January 30-February 4, Troy, N. Y.—Troy Automobile Club's show in State armory.

February 4-11, San Francisco, Cal.—San Francisco Motor Club's show in Dreamland and Pavilion rinks.

February 6-9, Grand Forks, N. D.—Grand Forks Automobile Dealers' Association's show in Auditorium.

February 6-11, Chicago, Ill.—National Association of Automobile Manufacturers' tenth national show in Coliseum. Pleasure and commercial cars, motorcycles and accessories.

February 6-11, Buffalo, N. Y.—Annual show.

February 8-12, Davenport, Ia.—Davenport automobile dealers' show at Commercial Club.

February 13-18, St. Louis, Mo.—Annual show in Coliseum.

February 13-18, Washington, D. C.—Second annual show in Convention hall.

February 13-18, Winnipeg, Canada.—Winnipeg Motor Trades Association's show.

February 13-18, Kansas City, Mo.—Motor Car Trade Association's show in Convention hall.

February 13-28, Dayton, Ohio—Second annual show in Memorial building.

February 14-18, Memphis, Tenn.—Memphis automobile dealers' first annual show in the Auditorium.

February 16-18, Fort Wayne, Ind.—Fort Wayne Automobile Association's first annual show.

buyer and success for the manufacturer and his agents.

Well, well, well! And so the motorists' dear old friend, Senator "Joe" Frelinghuysen, has been appointed president of the New Jersey State Board of Agriculture, and the board has placed itself on record as opposing reciprocity with other states! Good, old Joe! His appointment and his

February 18-25, Binghamton, N. Y.—Annual show.

February 18-25, Minneapolis, Minn.—Minneapolis Automobile Show Association's annual show in National Guard Armory.

February 18-25, Newark, N. J.—New Jersey Automobile Exhibition Co.'s fourth annual show.

February 18-25, Brooklyn, N. Y.—First annual show of Brooklyn automobile dealers at 23d Regiment armory.

February 18-25, Albany, N. Y.—Albany Automobile Dealers' second annual show in State Armory.

February 20, Cleveland, O.—Show in Central Armory.

February 20-25, Baltimore, Md.—Annual show in Fifth Regiment Armory.

February 20-25, Cincinnati, O.—Cincinnati Automobile Dealers' Association's show in Music Hall.

February 20-25, Hartford, Conn.—Hartford Automobile Dealers' Association's fourth annual show in Foot Guard armory.

February 20-25, Omaha, Neb.—Third annual show of the Omaha Automobile Show Association in Auditorium.

February 22, San Francisco, Cal.—Panama-Pacific road race.

February 24-27, New Orleans, La.—First annual show of New Orleans Automobile Club at Fair Grounds.

February 24-25, Keene, N. H.—Consolidated Motorcyclists' third annual motor vehicle show.

February 25-27, New Orleans, La.—New Orleans Automobile Club's annual Mardi Gras racemeet on Fair Grounds track.

February 25-March 4, Toronto Canada—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

success in securing the passage of the resolution almost measure up with his success in obtaining 53 of the more than 1,000 votes for the gubernatorial nomination. And presumably his fitness for an "agricultural" job in New Jersey is due to knowledge of farming acquired in his insurance office in New York, and to his ability to plant peanuts in politics and make the State of New Jersey appear a "small potato," indeed.

Philadelphia Also Devotes One Week to the Motor Truck

Part II of the Philadelphia show, nicknamed in advance "The Truck Show," which was opened to the public on Monday night last, 23d inst., is confined to one building, the Third Regiment Armory, the other armory which also was used last week having been returned to the "soldier boys." As a matter of fact, the show is not strictly a truck exhibition, but like the New York show, contains a fair sprinkling of electric pleasure cars and chassis. But it really is the first time the City of Brotherly Love has had an automobile show in which commercial vehicles hold the premier position. Last year, when the Quaker City inaugurated the two-week "stands," trucks were shown, but they were in comparatively small numbers, but eight brands being on exhibition, and they shared attention with a

big array of pleasure cars. This year, however, the positions are reversed, and a few electric pleasure cars are displayed among an assortment of 17 kinds of trucks.

Owing to a storm on Saturday night, which caused a great deal of delay in moving out the odd exhibits and moving in the new ones, the opening, which had been set for Monday noon, was deferred until the evening, and even then some of the stands were shy some of their exhibits. By Tuesday morning, however, all were in place, and the show bids fair to be as successful from the point of attendance as was last week's. Accessories shown last week, together with the pleasure cars in the same building in which trucks are now shown, remained in place. The exhibitors and their products are as follows: Autocar Co., Auto-

car; North Philadelphia Auto Station, Knox; General Vehicle Co., General; Eldredge & Wagner, Garford; Commercial Truck Co., Commercial; Packard Motor Car Co., Packard; Foss-Hughes Motor Car Co., Pierce-Arrow; Automobile Sales Corporation, Peerless; Prescott Adamson, Reo; White Co., White; United Motor Philadelphia Co., Alden-Sampson; C. A. Haines Co., Baker; Waverley Electric Co., Waverley; Mack Bros. Motor Car Co., Mack; Longstreth Motor Car Co., Alco; Oxford Automobile Co., Brush; A. G. Spalding & Bros., Babcock; General Motor Car Co., Rauch & Lang; J. C. Parker & Sons, Detroit; Woods Electric Garage, Woods; Studebaker Bros. Co., Studebaker.

The show will continue until next Saturday night at 11 o'clock.

Automobile Credit Association Meets, Eats and Hears Sweet Music

The last of the organized business meetings and banquets which marked the New York show season was that of the Automobile Trade Credit Association, which occurred Wednesday evening, 18th inst., in the clubhouse of the Freundschaft Society. The business meeting preceded the feast, and was short and to the point. The chief transaction was the election of directors, which resulted in but one change, F. E. Lemal, of the Continental Caoutchouc Co., succeeding Charles H. Kreuger. The directors will meet next month for the election of officers.

The banquet was well attended, more

than 50 members being present. Carl Kaufman, of the Motor Car Equipment Co., who is president of the association, presided. In an informal address he called attention to the objects of the association, cited a number of instances in which credit reports obtained through the organization had proved of immense value to its members, and urged the latter to try and induce others in the industry to affiliate themselves with the association. Short addresses also were made by A. J. Musselman, of the Cycle and Automobile Trade Journal; Henry M. Duncan, of the Westchester Appliance Co., and others.

During the evening a fine musical program was rendered by the Carlo Grand Opera Quartette. The entire affair was under the personal management of J. J. Cohn, of the Nonpareil Hardware Co.

Although of necessity it works quietly and without skyrockets, this credit association has been one of the strongest organizations in the industry. There are more than 100 members, among whom are manufacturers of automobiles, makers of material and accessories and a number of the leading jobbers. Its confidential reports have prevented losses to its members through unscrupulous or irresponsible retail dealers.

"Chauffeurs' Federation" Bobs Up with Amendments to New York Law

Although the New York automobile law, familiarly termed the Callan law, is less than a year old, the legislature now being in session, tinkering with it already has commenced. The first of the tinkers styles itself the "Chauffeurs' Federation of America," and while its real identity is shrouded in a heavy and impenetrable London fog, it seems to have its habitat in Utica, N. Y.

The "Chauffeurs" got busy last week and sent to Albany several proposed amendments which are the fruits of their profound and mature deliberation. Of course, they

want the fee now imposed upon chauffeurs reduced to the minimum of \$1, but the most important of all the amendments has to do with the much-mooted question of requiring owners to undergo examination and secure a license before being permitted to operate their cars. The "federation's" proposed amendment so revised section 281 of the Callan law as to define every person who drives an automobile, whether for monetary remuneration or not, as a chauffeur. In other words, if the amendment prevailed anyone who touches a steering wheel must be styled and must style himself or herself a chauffeur, and presumably will be forced to join the "union."

The "chauffeur's" other proposals would restrict the operation of automobiles to persons more than 18 years old; would make the owner or lessee of a car responsible for the speed of the car while he is aboard it, and would require the appointment by the secretary of state of a person with not less than 10 years' experience in the driving of automobiles (modestly probably forbids the "federation" from mentioning the candidate's name) as superintendent of a bureau for the licensing of chauffeurs.

San Francisco Dealers Jointly and Strenuously Oppose Motor Club's Show

When the officers of the San Francisco Motor Club decided to hold an automobile show, they did so without consulting very many of the San Francisco dealers, and the result was a storm of protest from the Motor Car Dealers' Association, the members of which contend that the time set, February 4-11, is not propitious for an exhibition of 1911 cars, the California "season" already being in full swing. Many of the dealers have refused flatly to have anything to do with the show, and among these

are the agents of the following cars who not only have refused to exhibit, but have made plain their decision by a published statement emphasizing the fact that they will not exhibit at this or any other 1911 show: Apperson, Buick, Cadillac, Croxton, Columbia, Chalmers, Detroit Electric, Everitt, E-M-F, Empire, Ford, Flanders, Hudson, Hupmobile, Jackson, Kissel, Kline, Maxwell, Mitchell, Knox, Locomobile, Lozier, Nance, Oakland, Overland, Oldsmobile, Packard, Pierce-Arrow, Pope-

Hartford, Renault, Reo, Regal, Simplex, Stoddard-Dayton, Stearns, Velie and Winton. Nevertheless, preparations for the show are going on, and while it won't be as large as originally intended, the San Francisco Motor Club and its supporters are hopeful of enough exhibits to fill the two buildings in which the show is to be held. The schedule calls for the use of Dreamland and Pavilion rinks, one of which will house the pleasure cars and the other the commercial cars.

WILCOX AND DEPALMA SHARE GLORY

**They Take Turns in Occupying Limelight
at Two Los Angeles Racemeets—Merz
Also Does Some Good Work.**

Although Ralph De Palma proved the king pin in the race meet, which took place on the Los Angeles motordrome on Saturday, 14th inst., his light was somewhat dimmed by the performances of Howard Wilcox, who alternately drove a National "40" and a National "60" in the second half of the meet, which was scheduled to have taken place on the following Sunday, but which was postponed for one week on account of threatening weather, and hence occurred Sunday last, 22d inst. The intrepid National pilot annexed three firsts and one second in the four races in which he entered; there were five events on the card.

Wilcox started his winning streak by driving a National "60" to the front in the five miles free-for-all race in which he approximated the competition record for that distance and forced De Palma to be content with third place. Dearborn, in a Fiat, was second. Wilcox's time was 3:21. Nikrent, in a Knox, also succeeded in hanging up low figures; he earned his honors in the five miles race for cars up to 600 cubic inches displacement. He reeled off the five miles in 3:38 $\frac{3}{4}$, and defeated Merz, in a National "40," who finished next best.

De Palma showed a return to his old form in the 10 miles free-for-all when he turned the tables on Wilcox. Wilcox, who drove a National "60" in this race, was second, however, and Dearborn (Fiat) was third. De Palma's time was 6:54. Wilcox "came back" in the very next race and forced De Palma to run second to him in the five miles free-for-all handicap. Nikrent, in his Knox, pulled into third place. The winner's time was 3:42 $\frac{1}{2}$. The longest race of the day was held off till the last, and consisted of a 50 mile event for cars up to 600 cubic inches and under. Wilcox and Merz, driving twin National "40's," tore off the 50 miles and finished one, two with less than one second's difference in their times. The race went to Wilcox in 40:23 $\frac{1}{2}$. The summary:

Five Miles. Free-for-all—Won by Wilcox, National "60"; second, Dearborn, Fiat; third, De Palma, Simplex. Time, 3:21.

Five Miles, 600 Cubic Inches and Under—Won by J. Nikrent, Knox; second, Merz, National "40." Time, 3:38 $\frac{3}{4}$.

Ten Miles, Free-for-all—Won by De Palma, Simplex; second, Wilcox, National "60"; third, Dearborn, Fiat. Time, 6:54.

Five Miles Handicap, Free-for-all—Won by Wilcox, National "60"; second, De Palma, Simplex; third, J. Nikrent, Knox. Time, 3:42 $\frac{1}{2}$.

Fifty Miles, 600 Cubic Inches and Under

—Won by Wilcox, National "40"; second, Merz, National "40." Time, 4:23 $\frac{1}{2}$.

Just a week and a day before, on Saturday, 14th inst., it was Ralph De Palma who proved the sensation of the day and carried off the lion's share of the honors. Driving a 90 horsepower Simplex, he won every race in which he started, and tied with Wilcox, who drove a six-cylinder National, in the one mile time trials. But as far as consistency of running went, Howard Wilcox proved the best performer by securing a place in every event on the card except the five miles free-for-all handicap.

A cold northeast wind and cloudy weather, which later turned into rain kept the attendance down, and only a small crowd was on hand to witness the sport. The one mile time trials brought out De Palma in his Simplex, Wilcox in a six-cylinder National and Dearborn in a 90 horsepower Fiat. De Palma and Wilcox each covered the course in 39 $\frac{1}{2}$ seconds, and Dearborn retired, after a perfunctory attempt, with valve trouble which kept him out of the subsequent races.

De Palma, Wilcox and Merz, who drove a National "40," faced the starter in the five miles free-for-all, and the race proved a duel between the big Simplex driven by De Palma and Wilcox's National six. De Palma won in the stretch by less than 10 feet; the clocks registered 3:26 $\frac{3}{4}$.

Winning easily, Merz, at the wheel of a National "40," crossed the tape in the 10 miles race for stock cars up to 600 cubic inches displacement in 7:23 $\frac{3}{4}$, with Bert Dingley in a Pope-Hartford and Wilcox in a National in second and third positions respectively. The 10 miles free-for-all proved another "sister act" between De Palma and Wilcox, with the former in the leading role and Merz piloting a National "40" third. De Palma's time was 6:52.

Starting from scratch in the five miles free-for-all and giving away time up to 20 seconds, De Palma again carried off first honors, his time for the five circuits being 3:55. Bert Dingley in his Pope-Hartford, with 15 seconds' handicap, was second.

The event which rang down the curtain on the day's sport was a 25 miles race open to stock chassis having less than 600 cubic inches piston displacement. In this race Dingley's time for the first five and ten miles, which was 3:47 $\frac{1}{2}$ and 7:25 $\frac{3}{4}$, respectively, was thought to be a new record, but subsequent investigation proved otherwise and the old marks still stand.

Dingley led the field for the first 18 miles, but at this mark two bad tires caused him to relinquish his place to Wilcox who drove a National "40" in this race. Another shift at the 22 mile mark put Merz, in another National "40," in the lead, where he stayed till the end, winning the race in 19:56 $\frac{1}{2}$. The summary:

One mile time trials—De Palma, Simplex, 39 $\frac{1}{2}$; Wilcox, National 39 $\frac{1}{2}$.

Five miles free-for-all—Won by De Palma, Simplex; second, Wilcox, National; third, Merz, National. Time, 3:26 $\frac{3}{4}$.

Ten miles, 600 cubic inches and under, stock chassis—Won by Merz, National; second, Dingley, Pope-Hartford; third, Wilcox, National. Time, 7:23 $\frac{3}{4}$.

Ten miles free-for-all—Won by De Palma, Simplex; second, Wilcox, National; third, Merz, National. Time, 6:52.

Five miles free-for-all handicap—Won by De Palma, Simplex (scratch); second, Dingley, Pope-Hartford (15 seconds). Time, 3:55.

Twenty-five miles, 600 cubic inches and under, stock chassis—Won by Merz, National; second, Wilcox, National; third, L. Nikrent, Buick. Time, 19:56 $\frac{1}{2}$.

Dates Fixed for a Florida Sandfest.

Despite indications to the contrary, there will be a speed carnival on Florida's sands after all. It is scheduled for March 27 to 30 inclusive, and will occur not on the famous Ormond-Daytona beach, but on the Atlantic-Pablo beach, which is near Jacksonville. The meet has been sanctioned by the American Automobile Association, and will be under the auspices of the Jacksonville Motor Club, "generated" by E. A. Moross, formerly of the Indianapolis Speedway. Similar in many respects to the Daytona beach, the Atlantic-Pablo beach is 40 miles in length, although but a portion of the northern end will be used as a course. The "National Beach Championships" are down for decision, and a long list of prizes includes a "Speed King Crown." The entry list is in charge of Howard Gamble, racing secretary of the Jacksonville Motor Club.

Motor Beats Both Men and Horses.

Another of those novelty races which are adding variety to the horse racing game in Jacksonville, Fla., was run on the 17th inst., the contenders being a 100 horsepower Marquette-Buick racing car driven by J. A. McCrea, two race horses and two foot runners. The automobile had to go one mile, the runners 525 and 530 yards respectively, and the horses six furlongs and thirty yards, and seven furlongs respectively. The automobile won by one foot from C. E. Dowling, one of the runners, who in turn finished five yards ahead of R. E. Kennedy, the other runner. The two horses came in several seconds later. The winner's time for the mile was 1:14 from standing start.

Oakland Motordrome Ready to be Opened.

If everything goes forward as scheduled, the Oakland Motordrome, which is now in course of construction close by the California city for which it is named, will make its debut as a racing center on January 28 and 29, next. A racemeet has been slated for those days and many of the better known eastern drivers are expected to take part in the two days' sport.

CHICAGO SHOW

WITH

FRENCH DRESSING



To be Ready for Serving
on Saturday Next—Will
Include Most of the Cars
Exhibited at New York
and 28 that Were Not.

As the redoubtable Sam Weller expressed it, "It's all in the seasonin'." Take nine parts automobiles, components and accessories and one part decorations, and you have an automobile show; shift the exhibits to a new town, change the decorations and you have another show.

Seasoning or no seasoning, however, it is unquestionable that a change in the setting of a large number of cars renders the display entirely different in character. Hence, although something over three score of the cars that recently have been on exhibition in New York City again will be on view in Chicago next week, there will be little apparent similarity between the Chicago show and the New York show which closed its doors last Saturday. And lest even this assurance be insufficient, be it added hastily that of the 93 varieties of car that will be shown in the Coliseum and First Regiment Armory during the week beginning next Saturday night, 28th inst., 18 will be products of more or less well-known makers that were not arrayed in the Eastern exposition, either in Madison Square or in the Grand Central Palace, while nine others will be entirely new products, or at least those which have not before been seen at any show of national character. There will be in addition a goodly array of accessory displays that have not been seen before.

Another point of distinction between the two great shows, though one involving less of actual difference than has been the case in previous years is that the Chicago show is the only truly national show to be held this year. The forthcoming exhibition will be held under the auspices of the National Association of Automobile Manufacturers, and, as in former years, will be under the experienced personal supervision of Samuel A. Miles, general manager of that association. It is, therefore, non-partisan in character, and as in the past will be the only show in which manufacturers of licensed and unlicensed cars will meet on even terms. The New York show in Madison Square Garden of course, was held by the Association of Licensed Automobile Manufacturers, and, therefore, was comprised entirely of products licensed under the now defunct Selden patent, at least insofar as complete cars were concerned. The distinction be-

tween licensed and unlicensed cars has not the same significance it formerly had, to be sure, but Chicago is none the less proud of the fact that its doors stand open, as they always have, to makers of all creeds and all doctrines.

This is pretty much the same as saying that the Chicago show includes a wider variety of products than is to be found at any other like exposition of automobile wares, which is perfectly true. Besides all the standard makers, whose products are to be seen everywhere, there always is gathered in the Coliseum and Armory displays a coterie of the smaller and newer producers of the Middle West, who are comparatively unknown outside their own localities, but whose products are prone to reveal striking points of originality in one way or another. This is particularly the case with the accessory divisions of the show, wherein are gathered numbers of makers of new things, the like of which never before has been seen.

But to return to the "seasoning"; whatever she may boast in the way of the exhibits themselves, Chicago never fails to pride herself on the copiousness and style of the decorative scheme. This year it will be even more distinguished and recherché than ever, if that be possible. Anyhow, the idea of its impressiveness can be expressed only by the aid of French adjectives, for the decorative "motif" is a Louis XV scheme—Western visitors are instructed to grasp the nose lightly between the thumb and forefinger while speaking, and to pronounce "XV" as if it were spelled "cans," rather than "Quinze," as the French prefer to have it.

Not that the shade of Madame Pompadour in any way may be expected to rule the prevailing spirit of the visiting throng, but rather the generous and artistic spirit of the eighteenth century in France has been drawn upon in suggesting the general style of the show. The piece de resistance of the setting will be the central group of four gigantic fountains plashing under a roof structure of imitation stained glass. The entire value of the Coliseum, 300 x 175 feet, will be hidden by a painted canvas on which the stained glass effect will be secured, the false roof being supported on massive bronze scrolls. The

fountains will stand at the center of the four sections, into which the main floor will be divided, and will be 30 feet wide at the base and 38 feet high. The central column will be illuminated, as will a huge lantern at the top, while water in a four-foot column will fall from a height of 28 feet into the basin below.

From either side of the fountains large ornamental shell-shaped vases will be arranged in rows on pedestals 10 feet in height. Between them will be lamp posts bearing clusters of 12 and 16-inch globes. At the aisle fronts of the central spaces will be posts bearing lighted globes and vases of real flowers, while floral decorations will be used effectively at other points. The iron girders which support the roof of the building will be masked by massive pillars of a design in harmony with that of the fountains, while through the ceiling which they support will project at intervals 500-watt tungsten lamps; this feature and other elements of the lighting scheme contributing to a greater brilliance throughout the show than has been secured heretofore.

The embellishment of the gallery, the ironwork of which will be concealed behind appropriate falsework corresponding with the scheme of the main floor, the Annex and the small section of the basement that is to be given over to car exhibits will be in much the same style. When it comes to the First Regiment Armory, however, the phrase book may be abandoned in favor of the King's English. For after crossing the troublous "channel" of an alley which separates the two buildings, the visitor will find himself in a British "country estate" setting—the same, in fact, that was used last year in the Coliseum. But even here, surrounded by the familiar brick walls, iron railings, potted plants and growing trees—or trees that were growing not so long ago—Mr. Weller himself might continue his famous dissertation on "weal pie" and find his wisdom readily appreciated. For while the "seasoning" may have a great deal to do with the flavor of the pie, the substance, he would stoutly aver, is mainly "kittens." And whatever may be said of the decorations, the show will prove a big show—of cars.

With the total of 93 exhibits of different

car makers, 62 of which will be staged in the Coliseum and 31 in the Armory, and the 171 accessory and parts displays, all but 41 of which will be in the larger area of the Coliseum, there will be a total of 264 exhibits. Like the recent show in New York, the Chicago display will be divided in two sections; the first of which, which opens on Saturday night and closes one week later, being given over solely to the exhibition of pleasure cars. Part II, which will run from the 6th to the 11th ult., will be devoted mainly to commercial vehicles, but also will have a small overflow of pleasure cars and a generous measure of accessories and parts, a majority of which will hold over from Part I. The total number of individual displays for the entire show of two weeks' duration is expected to total up to 357, though advance totals are not always to be relied on in the case of Chicago shows, owing to a bewildering habit

of the more or less local exhibitors of straying in at the last moment and hiring table room in the stands of established exhibitors.

Of the cars that will be on view, however, the following are among those that did not appear in New York at either show, and which, therefore, will make their first show appearance for 1911: Rambler, Glide, Fal, Halladay, Dorris, Austin, Fiat, Diamond T, Staver, Great Western, Kline, Black Crow, Middleby and Zimmerman. Among the electrics which will not be segregated in Part II of the show, as was the case in New York, there will be the Woods, Baker, Babcock and R & L, which have not been seen before this year. There will be two newcomers in the Ohio and Broc electrics, while the exhibits of new gasoline cars will include the Badger, Colby, Kenmore, Enger, Westcott, Cino and Ames.

As far as the bulk of the show is concerned, it will include such sterling products as the Pierce-Arrow, Locomobile, Knox, Alco, Stevens-Duryea, Stearns and Franklin, which will be shown on the main floor of the Coliseum; or the medium-priced contingent, among which are the Hudson, Haynes, Mitchell, Overland, Maxwell, Corbin, E-M-F, National and Chalmers. The display in the Annex will include among other well-known cars the Brush, Marmon, Studebaker electric, Inter-State and Jackson lines, while in the Armory will be shown the Kissel, Pullman, Case, Garford, Hupmobile, Waverley electric, Ohio and Stoddard-Dayton 30 and 20 lines, the larger models of the same line being on display on the main floor of the Coliseum.

The complete list of exhibitors for the first week, their wares and their locations is given below.

The Cars that Will be Staged at Chicago and Their Locations

(Those indicated* by an asterisk(*) were not displayed in New York.)

Pleasure Cars in Coliseum Main Floor.

American Locomotive Co., Providence, R. I. (F4)—Alco.
Atlas Motor Car Co., Springfield, Mass. (E3)—Atlas.
Baker Motor Vehicle Co., Cleveland, Ohio (G2)—Baker electric.*
Buick Motor Co., Flint, Mich. (A2)—Buick.
Cadillac Motor Car Co., Detroit, Mich. (C5)—Caddilac.
Chalmers Motor Co., Detroit, Mich. (A4)—Chalmers-Detroit.
Columbia Motor Car Co., Hartford, Conn. (E2)—Columbia.
Corbin Motor Vehicle Corporation, New Britain, Conn. (G2)—Corbin.
Dayton Motor Car Co., Dayton, Ohio (D6)—Stoddard-Dayton.
E-M-F Co., Detroit, Mich. (C4)—E-M-F and Flanders.
Elmore Mfg. Co., Clyde, Ohio (H1)—Elmore.
Fal Motor Co., Chicago, Ill. (L1)—Fal.*
Franklin Mfg. Co., H. H., Syracuse, N. Y. (B5)—Franklin.
Haynes Automobile Co., Kokomo, Ind. (112)—Haynes.
Hudson Motor Co., Detroit, Mich. (B2)—Hudson.
Jeffery Co., Thomas B., Kenosha, Wis. (C2)—Rambler.*
Knox Automobile Co., Springfield, Mass. (F1)—Knox.
Locomobile Co. of America, Bridgeport, Conn. (D5)—Locomobile.
Lozier Motor Co., Plattsburg, N. Y. (A3)—Lozier.
Matheson Motor Car Co., Wilkes-Barre, Pa. (F3)—Matheson.
Maxwell-Briscoe Motor Co., Tarrytown, N. Y. (D1)—Maxwell.

Metzger Motor Car Co., Detroit, Mich. (J1)—Everitt.
Mitchell-Lewis Motor Co., Racine, Wis. (K1)—Mitchell.
Moline Automobile Co., East Moline, Ill. (B1)—Moline.
National Motor Vehicle Co., Indianapolis, Ind. (A5)—National.
Olds Motor Works, Lansing, Mich. (B6)—Oldsmobile.
Packard Motor Car Co., Detroit, Mich. (C1)—Packard.
Peerless Motor Car Co., Cleveland, Ohio (C6)—Peerless.
Pierce-Arrow Motor Car Co., Buffalo, N. Y. (A6)—Pierce-Arrow.
Pope Mfg. Co., Hartford, Conn. (D3)—Pope-Hartford.
Premier Motor Mfg. Co., Indianapolis, Ind. (E4)—Premier.
Reo Motor Car Co., Lansing, Mich. (B4)—Reo.
Stearns Co., F. B., Cleveland, Ohio (C3)—Stearns.
Stevens-Duryea Co., Chicopee Falls, Mass. (B3)—Stevens-Duryea.
Thomas Motor Co., E. R., Buffalo, N. Y. (D4)—Thomas.
White Co., Cleveland, Ohio (F2)—White.
Willys-Overland Co., Toledo, Ohio (D2)—Overland.
Winton Motor Carriage Co., Cleveland, Ohio (A1)—Winton.
Woods Motor Vehicle Co., Chicago, Ill. (E1)—Woods electric.*

Pleasure Cars in Coliseum Annex (First Floor).

Babcock Electric Carriage Co. (Q3)—Babcock electric.*
Bartholomew Co., Peoria, Ill. (Q2)—Glide.*
Brush Runabout Co., Detroit, Mich. (M1)—Brush.

Inter-State Automobile Co., Muncie, Ind. (P1)—Inter-State.
Jackson Automobile Co., Jackson, Mich. (Q1)—Jackson.
Nordyke & Marmon Co., Indianapolis, Ind. (O1)—Marmon.
Studebaker Bros. Mfg. Co., South Bend, Ind. (N1)—Studebaker.
Streator Motor Carriage Co., Streator, Ill. (O2)—Streator.*

Pleasure Cars in Coliseum Basement.

Ames Motor Car Co., Chicago, Ill. (14)—Ames.*
Badger Motor Car Co., Columbus, Wis. (3)—Badger.*
B. C. K. Motor Car Co., York, Pa. (15)—Kline.*
Broc Electric Vehicle Co., Cleveland, Ohio (10)—Broc electric.*
Colby Motor Co., Mason City, Ia. (2)—Colby.*
Cole Motor Car Co., Indianapolis, Ind. (8)—Cole.
Enger Motor Car Co., Cincinnati, Ohio (6)—Enger.*
Haberer & Co., Cincinnati, Ohio (11)—Cino.*
Hupp-Yeats Electric Car Co., Detroit, Mich. (1)—Hupp-Yeats.
Kenmore Mfg. Co., Chicago, Ill. (4)—Kenmore.*
Middleby Auto Co., Reading, Pa. (12)—Middleby.*
Ohio Electric Car Co. (1)—Ohio electric.*
Otto Gas Engine Works, Philadelphia, Pa. (16)—Otto.
Westcott Motor Car Co., Indianapolis, Ind. (9)—Westcott.*
Zimmerman Mfg. Co., Auburn, Ind. (18)—Zimmermann.*

MIND'S EYE PICTURES SUGGESTED BY THE NAMES OF WELL-KNOWN CARS.



C O L U M B I A



F R A N K L I N



H U D S O N



A T L A S

Pleasure Cars in First Regiment Armory.

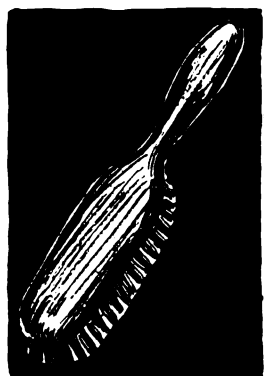
- American Motor Car Co., Indianapolis, Ind. (B4)—American.
 Anderson Electric Carriage Co., Detroit, Mich. (D1)—Anderson electric.*
 Auburn Automobile Co., Auburn, Ind. (E4)—Auburn.
 Austin Automobile Co., Grand Rapids, Mich. (C2)—Austin.*
 Benz Auto Import Co., New York City (E5)—Benz.
 Black Mfg. Co., Chicago, Ill. (F1)—Black Crow.*
 Buckeye Mfg. Co., Anderson, Ind. (D4)—Lambert.
 Cartecar Co., Pontiac, Mich. (C1)—Cartercar.
 Chadwick Engineering Works, Pottstown, Pa. (G4)—Chadwick.
 Courier Car Co., Dayton, Ohio (G2)—Courier.
 Diamond T Motor Car Co., Chicago, Ill. (E3)—Diamond T.*
 Dorris Motor Car Co., St. Louis, Mo. (A3)—Dorris.*
 Fiat Auto Co., Poughkeepsie, N. Y. (E2)—Fiat.*
 Garford Co., Elyria, Ohio (C3)—Garford.
 Great Western Auto Co., Peru, Ind. (H1)—Great Western.*
 Hupp Motor Car Co., Detroit, Mich. (A1)—Hupmobile.
 Kissel Motor Car Co., Hartford, Wis. (A4)—Kissel.
 McIntyre Co., Auburn, Ind. (B2)—McIntyre.
 Midland Motor Co., Moline, Ill. (G3)—Midland.
 Moon Motor Car Co., St. Louis, Mo. (D2)—Moon.
 Ohio Motor Car Co., Cincinnati, Ohio (G1)—Ohio.
 Pierce Motor Co., Racine, Wis. (B3)—Case.
 Pullman Motor Car Co., York, Pa. (D3)—Pullman.
 Rauch & Lang Carriage Co., Cleveland, Ohio (F2)—Rauch & Lang electric.*
 Royal Tourist Car Co., Cleveland, Ohio (C4)—Royal Tourist.
 Schacht Motor Car Co., Cincinnati, Ohio (G6)—Schacht.
 Selden Motor Vehicle Co., Rochester, N. Y. (B1)—Selden.
 Simplex Motor Car Co., Mishawaka, Ind. (E6)—Amplex.
 Speedwell Motor Car Co., Dayton, Ohio (E1)—Speedwell.
 Staver Carriage Co., Chicago, Ill. (G5)—Staver-Chicago.*
 Waverley Co., Indianapolis, Ind. (A2)—Waverley electric.

Parts and Accessories that Will be Displayed at Chicago

(Space numbers Denoted "A" are located in the First Regiment Armory; all others are in the Coliseum. Exhibits indicated by an asterisk (*) were not displayed in New York.)

- Adams & Westlake Co., Chicago, Ill. (8A)—Aluminum, brass and bronze castings, lamps and windshields.*
 Atlantic Refining Co., Cleveland, Ohio (17A)—Arco Spitzoff metal polish.
 Ajax-Grieb Rubber Co., New York City (125)—Ajax tires.
 Ajax Trunk & Sample Case Co., New York City (3A)—Tire trunks.
 Auto Parts Mfg. Co., Muncie, Ind. (81)—Transmissions and clutches.*
 American Ball Bearing Co., Cleveland, Ohio (29)—Ball bearings and axles.
 American Ever Ready Co., New York City (96)—Ever Ready batteries, lamps, etc.
 Apple Electric Co., Dayton, Ohio (142)—Dynamos, storage batteries and lighting accessories.
 Armiger Chemical Co., Chicago, Ill. (22A)—Rex metal polish.*
 Atlas Chain Co., Brooklyn, N. Y. (7A)—Atlas tire chains.
 Auburn Auto Pump Co., Auburn, N. Y. (145)—Tire pumps.
 Auto Improvement Co., New York City (95)—Self-starting devices and accessories.
 Badger Brass Mfg. Co., Kenosha, Wis. (41)—Solar lamps and generators.
 Baldwin Chain & Mfg. Co., Worcester, Mass. (61)—Baldwin chains and recoil checks and Brown steering gears.
 Barco Brass & Joint Co., Chicago, Ill. (14A)—Exhaust horns and muffler cut-out valves.*
 Batavia Rubber Co., Batavia, N. Y. (137)—Batavia tires.
 Blackledge Mfg. Co., John W., Chicago, Ill. (31A)—Auxiliary springs.*
 Booth Demountable Rim Co. (94)—Demountable rims.
 Bosch Magneto Co., New York City (118)—Ignition systems.
 Bowser & Co., S. F., Fort Wayne, Ind. (71)—Bowser gasoline and oil storage apparatus.
 Briggs Mfg. Co., Elkhart, Ind. (116)—Briggs magneto.
 Briggs & Stratton Co., Milwaukee, Wis. (133)—B & S igniter.
 Briscoe Mfg. Co., Detroit, Mich. (24)—Radiators and fittings.
 Brown Lipe Gear Co., Syracuse, N. Y. (63)—Transmissions, differentials and steering gears.
 Brownell Motor Co., F. A., Rochester, N. Y. (18A)—Motors.*
 Byrne-Kingston & Co., Kokomo, Ind. (75)—Kingston carbureters.
 Chilton Co., Philadelphia, Pa. (34A)—Publications.
 Class Journal Co., New York City (40A)—Publications.
 Cleveland Speed Indicator Co., Cleveland, Ohio (106)—Cleveland speed and time indicators.

MIND'S EYE PICTURES SUGGESTED BY THE NAMES OF WELL KNOWN CARS.



BRUSH



ROYAL TOURIST



WINTON



PULLMAN

- Connecticut Telephone and Electric Co., Meridian, Conn. (13)—Shock absorbers, spark coils, magnetos and ignition specialties.
- Consolidated Rubber Tire Co., New York City (16)—Tires.
- Continental Caoutchouc Co., New York City (10)—Continental tires and rims.
- Continental Motor Mfg. Co., Muskegon, Mich. (65)—Motors.
- Continental Rubber Works Co., Erie, Pa. (115)—Tires.
- Cook's Sons, Adam, New York City (130)—Lubricants.
- Cook's Standard Tool Co., Kalamazoo, Mich. (93)—Tools.
- Cramp & Sons Ship and E. B. Co., Wm., Philadelphia, Pa. (37)—Bronze and bearing metals.
- Diamond Chain & Mfg. Co., Indianapolis, Ind. (35)—Chains and sprockets.
- Diamond Rubber Co., Akron, Ohio (55)—Diamond tires.
- Dietz Co., New York City (34)—Lamps.
- Dixon Crucible Co., Jos., Jersey City, N. J. (25)—Lubricants.
- Dover Stamping and Mfg. Co., Cambridge, Mass. (139)—Drip pans and funnels.
- Driggs-Seabury Ordnance Corp., Sharon, Pa. (102)—Crank shafts and frames.
- Edmunds & Jones Mfg. Co., Detroit, Mich. (73)—Lamps.
- Edison Storage Battery Co., Orange, N. J. (101)—Storage batteries.
- Eisemann Magneto Co., New York City (110)—Magnetos.
- Electric Storage Battery Co., Philadelphia, Pa. (69)—Accumulators.
- Elite Mfg. Co., Ashland, Ohio (2A)—Jacks.
- Empire Tire Co., Trenton, N. J. (107)—Empire tires.
- Ernst's Sons, C. F., Buffalo, N. Y. (76)—Turntables.
- Excelsior Motor & Mfg. Co., Chicago, Ill. (86)—Motors.
- Findeisen & Krypt Mfg. Co., Chicago, Ill. (16A)—Carburetters and specialties.
- Fellwock Auto & Mfg. Co., Evansville, Ind. (10A)—Wood bodies and windshields.*
- Firestone Tire & Rubber Co., Akron, Ohio (67)—Firestone pneumatic and solid tires.
- Fisk Rubber Co., Chicopee Falls, Mass. (38)—Fisk tires.
- G & J Tire Co., Indianapolis, Ind. (44)—G & J tires.
- Gabriel Horn Mfg. Co., Cleveland, Ohio (50)—Gabriel exhaust horns and Foster shock absorbers.
- Garage Equipment Mfg. Co., Milwaukee, Wis. (23A)—Gem spark plug wrench.
- Gates-Osborne Mfg. Co., Marshalltown, Ia. (26A)—Tops, lamp covers and tire cases.*
- Gemmer Mfg. Co., Detroit, Mich. (85)—Steering gears and parts.
- Gilbert Mfg. Co., New Haven, Conn. (127)—Bowers carburetter, tire jacks, lamp covers, etc.
- Globe Machine & Stamping Co., Cleveland, Ohio (129)—Steel boxes for tools.
- Goodrich Co., B. F., Akron, Ohio (47)—Goodrich tires.
- Goodyear Tire and Rubber Co., Akron, Ohio (51)—Goodyear tires and air bottles.
- Gray & Davis, Amesbury, Mass. (43)—Lamps.
- Gray-Hawley Mfg. Co., Detroit, Mich. (36)—Exhaust horns and mufflers.*
- Hagstrom Bros. Mfg. Co., New York City (24A)—Supplies.
- Ham Mfg. Co., Rochester, N. Y. (6)—Lamps.*
- Hardy Co., R. E., Chicago, Ill. (122)—Sta-rite spark plugs.
- Harris Oil Co., R. A., Providence, R. I. (58)—Lubricants.
- Harrison Radiator Co., Lockport, N. Y. (607)—Radiators.
- Hartford Rubber Works Co., Hartford, Conn. (30)—Hartford tires.
- Hartford Suspension Co., Jersey City, N. J. (59)—Truffault-Hartford shock absorbers.
- Havoline Oil Co., New York City (89)—Lubricants.
- Haws, Geo. A., New York City (138)—Lubricants.
- Hayes Mfg. Co., Detroit, Mich. (5A)—Radiators, hoods and fenders.
- Heinze Electric Co., Lowell, Mass. (17)—Magnetos, coils and ignition devices.
- Herz & Co., New York City (5)—Magnetos and ignition devices.
- Homo Co. of America, Jersey City, N. J. (97)—Homo mixer.
- Horseless Age, New York City (1A)—Publications.
- Imperial Brass Mfg. Co., Chicago, Ill. (5B)—Inlet and outlet pipes.*
- Jones Speedometer Co., New York City (7)—Speedometers, odometers, annunciators and specialties.
- K-W Ignition Co., Cleveland, Ohio (25A)—Ignition devices.
- K & W Mfg. Co., Ashland, Ohio (22A)—K & W reliners for tires.
- Kent Mfg. Works, Atwater, Philadelphia, Pa. (134)—Igniters and timers.
- Keystone Lubricating Co., Philadelphia, Pa. (30A)—Keystone oils and grease.
- Kokomo Electric Co., Kokomo, Ind. (74)—Kingston coils and timers.
- Leather Tire Goods Co., Niagara Falls, N. Y. (132)—Adjustable tire treads and non-skid bands.
- Link Belt Co., Philadelphia, Pa. (104)—Chains.
- Long Mfg. Co., Chicago, Ill. (53)—Radiators.*
- Longdin-Brugger Co., Fond du Lac, Wis. (39A)—Automobile tops.*
- Lovell-McConnell Mfg. Co., Newark, N. J. (2)—Klaxon horns.
- Lutz-Lockwood Mfg. Co., Aldene, N. J. (11A)—S-X ignition devices.
- McCord Mfg. Co., Detroit, Mich. (22)—Radiators, lubricators, fans and gaskets.
- McCue Co., Hartford, Conn. (140)—Axes.
- Manufacturers Foundry Co., Waterbury, Conn. (279)—Castings.
- Marshalltown Buggy Co., Marshalltown, Ia. (20A)—*
- Motor Parts Co., Plainfield, N. J. (12A)—Stanwood steps.
- Motor Vehicle Publishing Co., New York City (15A)—Publications.
- Mezger, C. A., Inc., New York City (—)—Windshields and "Soot-proof" plugs.
- Michelin Tire Co., Milltown, N. J. (1)—Michelin tires.
- Model Gas Engine Works, Peru, Ind. (38A)—Motors, clutches and transmissions.*

MIND'S EYE PICTURES SUGGESTED BY THE NAMES OF WELL KNOWN CARS.



PALMER-SINGER



KNOX



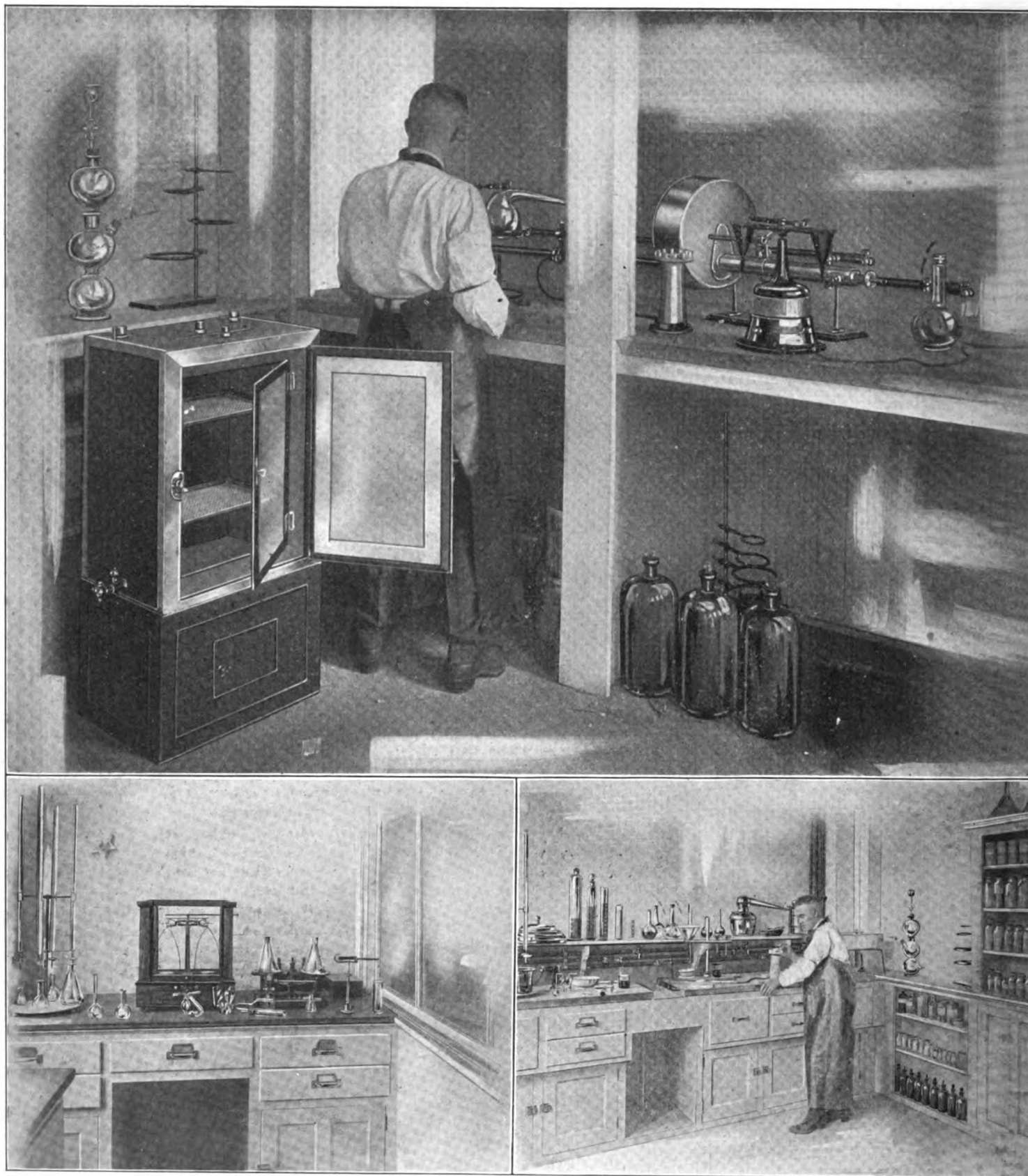
MOON



STEARNS

- Morgan & Wright, Detroit, Mich. (26)—Morgan & Wright tires.
- Morrison-Ricker Mfg. Co., Grinnell, Ia. (36A)—Grinnell gloves.
- Motz Clincher Tire & Rubber Co., Akron, Ohio (77)—Tires.
- Motor Age, Chicago, Ill. (35A)—Publications.
- Motsinger Device Mfg. Co., Pendletown, Ind. (121)—Ignition devices.*
- Muncie Gear Works, Muncie, Ind. (84)—Parts.
- National Carbon Co., Cleveland, Ohio (46)—Dry cells.
- National Coil Co., Lansing, Mich. (103)—Spark coils.
- National Tube Co., Pittsburg, Pa. (40)—Shelby seamless steel tubing.
- Never-Miss Mfg. Co., Lansing, Mich. (131)—Spark plugs.*
- New York & New Jersey Lub. Co., New York City (8)—Lubricants.
- Norton Co., Worcester, Mass. (5A)—Grinding wheels.*
- Oliver Mfg. Co., Chicago, Ill. (70)—Peerless jacks.
- Pantasote Co., New York City (124)—Tops and upholstering materials.
- Pennsylvania Rubber Co., Jeannette, Pa. (18)—Pennsylvania tires.
- Perfection Spring Co., Racine, Wis. (6A)—Automobile springs.
- Pfanstiehl Electrical Laboratory, North Chicago, Ill. (141)—Ignition devices.*
- Pittsfield Spark Coil Co., Dalton, Mass. (64)—Magnetos, coils, plugs and ignition devices.
- Polson Mfg. Co., Buffalo, N. Y. (32A)—Steel.
- Pratt Mfg. Co., Wm. E., Chicago, Ill. (4A)—Specialties.
- Randall-Faichney Co., Boston, Mass. (114)—Jericho exhaust horns, B-line grease guns and Bing spark plugs.
- Remy Electric Co., Anderson, Ind. (66)—Magnetos.
- Republic Rubber Co., Youngstown, Ohio (20)—Republic tires.
- Reichenbach Laboratories Co., Chicago, Ill. (143)—Vortex vaporizer.
- Robinson, Fred, New York City (539)—Tail lamps.
- Ross Gear & Tool Co., Lafayette, Ind. (98)—Steering gears.
- Royal Equipment Co., Bridgeport, Conn. (82)—Band brakes and brake lining material.
- Russell Motor Axle Co., North Detroit, Mich. (147)—Axles.
- Sager Co., J. H., Rochester, N. Y. (128)—Supplementary springs.
- Shaler Co., C. A., Waupun, Wis. (136)—Electric vulcanizers.
- Shawmut Tire Co., Boston, Mass. (29A)—Shawmut tires.
- Sherwin-Williams Co., New York City (90)—Paints and varnishes.
- Simms Magneto Co., New York City (21A)—Simms magneto.
- Skinner & Skinner Co., Chicago, Ill. (19A)—Turntables, hand tire pumps and shock absorbers.*
- Smith Co., A. O., Milwaukee, Wis. (15)—Gears and parts.
- Sparks, Frank E., Chicago, Ill. (27A)*
- Sparks-Withington Co., Jackson, Mich. (112)—Fans, stampings and screw machine products.
- Spicer Mfg. Co., Plainfield, N. J. (62)—Spicer universal joints.
- Splittorf, Inc., C. F., New York City (49)—Splittorf magnetos, plugs and ignition devices.
- Sprague Umbrella Co., Norwalk, Ohio (79)—Tops and windshields.
- Standard Roller Bearing Co., Philadelphia, Pa. (4)—Roller bearings.
- Standard Welding Co., Cleveland, Ohio (28)—Electrically welded tubing and parts.
- Standard Varnish Works, Chicago, Ill. (28A)—Varnishes.*
- Standard Thermometer Co., Boston, Mass. (146)—Standard speedometer.
- Star Rubber Co., Akron, Ohio (117)—Star tires.
- Stein Double Cushion Tire Co., Akron, Ohio (113)—Tires.
- Stewart & Clark Mfg. Co., Chicago, Ill. (105)—Speedometers.
- Stromberg Motor Devices Co., Chicago, Ill. (87)—Carburetters.
- Swinehart Tire & Rubber Co., Akron, Ohio (14)—Swinehart tires.
- Thermoid Rubber Co., Trenton, N. J. (91)—Tires, tubes and brake linings.
- Timken Roller Bearing Co., Canton, Ohio (33)—Roller bearings.
- Timken-Detroit Axle Co., Detroit, Mich. (32)—Axles.
- Tingley & Co., Chas. O., Rahway, N. J. (13A)—C. O. T. electrical horn.
- Troy Carriage Sunshade Co., Troy, Ohio (37A)—Windshields and tops.
- Turner Brass Works, Sycamore, Ill. (100)—Brass parts and fittings.
- U. S. Light & Heating Co., New York City (76A)—Storage batteries.
- Universal Tire Protector Co., Angola, Ind. (9A)—Universal tire protector.
- Union Auto Repair Co., Pittsburg, Pa. (33A)*
- Valentine & Co., New York City (11)—Varnishes.
- Van Wagner Co., E. B., Syracuse, N. Y. (120)—Dies and finished metal castings.
- Veeder Mfg. Co., Hartford, Conn. (42)—Tachometers and odometers.
- Vesta Accumulator Co., Chicago, Ill. (3)—Accumulators.
- Voorhees Rubber Mfg. Co., Jersey City, N. J. (123)—Rubber hose and packing.
- Warner Gear Co., Muncie, Ind. (57)—Gears and parts.
- Warner Instrument Co., Beloit, Wis. (19)—Warner autometers and clocks.
- Warner Mfg. Co., Toledo, Ohio (78)—Transmissions and steering gears.
- Weed Chain Tire Grip Co., New York City (9)—Weed tire chains.
- Western Motor Co., Logansport, Ind. (109)—Motors.*
- Whiteley Steel Co., Muncie, Ind. (99)—Steel castings.*
- Wheeler & Shebler, Indianapolis, Ind. (12)—Carburetters and magnetos.
- Whitney Mfg. Co., Hartford, Conn. (23)—Whitney chains.
- Williams Co., J. H., New York City (54)—Forgings.
- Willard Storage Battery Co., Cleveland, Ohio (144)—Elba lighting outfits.

CHEMICAL ANALYSIS APPLIED TO AUTOMOBILE MANUFACTURE.

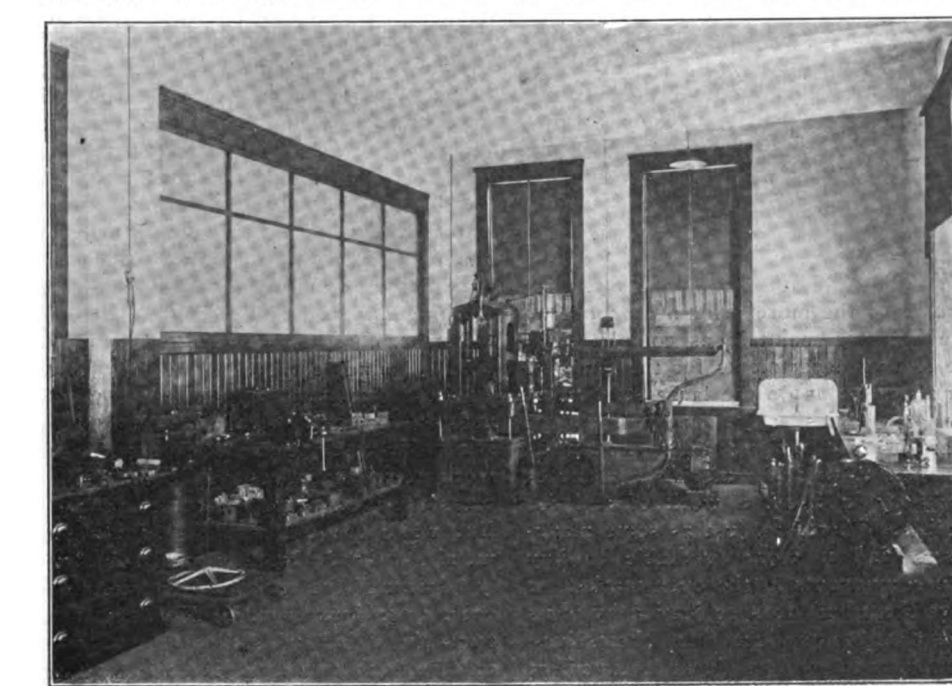


VIEWS IN THE OVERLAND LABORATORY. 1—ANALYZING FOUNDRY PRODUCTS AND CRUDE MATERIALS. 2—APPARATUS FOR QUANTITATIVE TESTS. 3—APPARATUS FOR QUALITATIVE TESTS

Methods that Eliminate Uncertainties in Motor Cars

To be given the stripped, gray chassis of a powerful car, fresh from the assembling floor and untried; to be given unlimited sup-

plies of gasoline, oil and parts, tires galore and a stock of tools that any chauffeur would envy; to be given an unlimited charter and the open road; to experience daily the uncertainties of getting acquainted with a new car, learning its individualities, correcting its faults, training it to obey the master hand of the skilled driver, matching human endurance and technique against the craft of the builder and the resistance of the nervous fabric of iron and steel; to spend the days in striving to find a weakness in the machine that trained men have wrought to render flawless; to be a road tester—such is the ambition of the average motor-mad boy and, secretly, perhaps, is the yearning of many a man of years.



RIEHLE TESTING MACHINE AT REO FACTORY

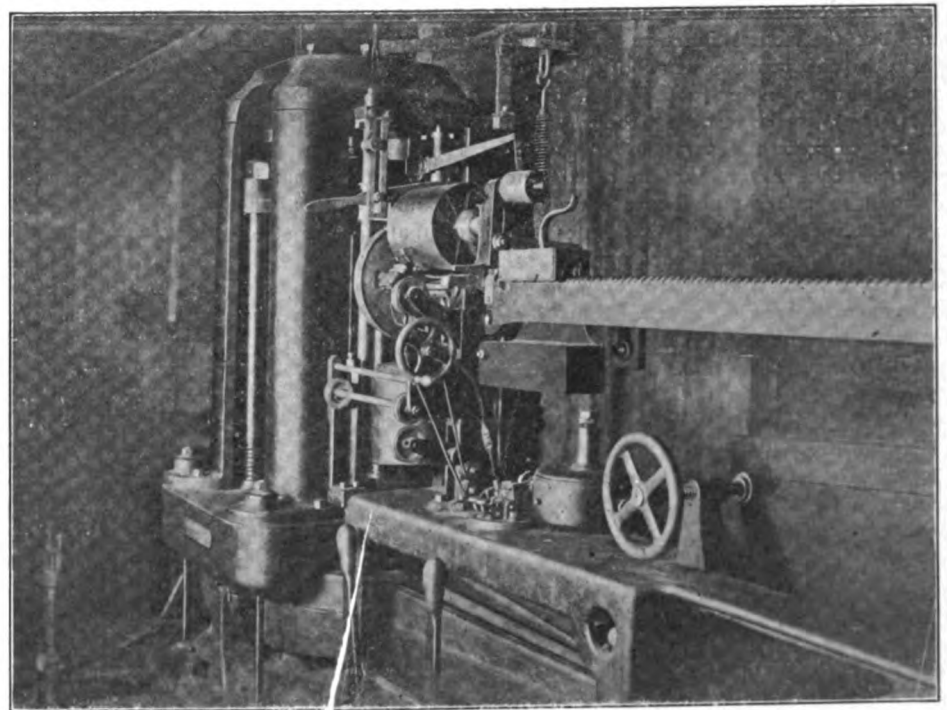
And to the average man that existence expresses the sum and substance of factory testing as he conceives it to be carried out by the average automobile builder. The man of a little more than the average fund of information, who reads the trade press and pretends to accurate knowledge of the affairs of the motor world, knows better. He is aware that in all well-regulated factories the car that reaches the road tester's hands already is a well-proved piece of machinery. Its parts have been subjected to individual inspection and are known to be accurately made within limits that almost are beyond physical conception. Its structural units have been assembled separately and run

for a stated period to prove that they are properly co-ordinated. The chassis complete, save for the body and equipment, has

about, and as far as actuality is concerned, the average road tester is more an inspector than an experimenter.

The romance of road testing belongs to the old days, when the tester was often the most practical and experienced automobile man outside the company office, and when frequently it was necessary for him practically to rebuild the car before it left his hands. Save for the trusted individual whose privilege it is to handle the "model car" of a new series, and who in consequence is driver, master mechanic, critic and god-father-in-overalls to the fledgling, there is little of the experimental flavor in the road testing of the present day.

That bit of evolution expresses in a feeble and round-about way something of what has been passing in factory organizations of the better class within the past four or five years. It seldom happens today that any part or group of parts reaches the assembling stage in a state that, for any reason is open to question—that is to say, disregarding such "mistakes" as happen in all families. The road tester is retained merely as a part of the detective system which is designed to find such errors before the customer gets a chance at his



OLSEN TESTING MACHINE IN RAMBLER PLANT

been tried out in a similar manner. The chassis that goes to the road tester, generally speaking, is a finished product; his duty is to pass final criticism on its performance; there is little of experiment

new car and has a chance to complain.

But testing, in the sense of exploration in the realms of mechanics, and even of physics and chemistry, remains a vital part of the business of automobile build-

ing. It is necessary for the engineer to try out his ideas in concrete form before they are ready to be tried out on the public. It is necessary to do much building and rebuilding of parts and of the tools that are employed in making them before production can be commenced on a rapid, economic and paying scale. There is of necessity much of the cut and try in the model room of the average factory that is not without its delights and disappointments to the workman. The principle of the thing is nothing more nor less than the advancing of a certain part of the uncertainties which attend all manufacturing operations from the end to the beginning of operations, it is a case of ante-mortem discoveries rather than post-mortem.

This part of automobile building is a sealed book to the outsider. Competition rules that it shall be so. Hence, the average motorist little knows or even dreams of the activity and expense that is involved in getting ready to build a new car. Likewise he is blissfully ignorant of the amount of energy that is expended in experimenting not only with mechanisms but with materials. For the modern motor-car builder, besides removing the uncertainties of production from the period of regrets to the period of prevention, has advanced another stage and he studies the qualities even of his materials with painstaking and analytical thoroughness.

Hence, the laboratory, which sometimes swells to such importance as to be separately housed in secrecy of an "engineering building." Of the existence of such laboratories the general public may be dimly aware, but the actual function which they perform in the routine work of the plant is not generally understood. As a matter of fact, they are as vital in their way as any other organized department of the factory; only the reason for their existence is difficult to understand because they are non-productive. Nothing that goes into the car is made in the laboratory, its sole product is advice; hence, it stands in the same general capacity as the shop foreman, who has nothing to do all day but to stand around all day and watch somebody else do the work. Sometimes a director, brought up in other lines, finds it hard to see the justification for the capital outlay required to maintain a fully-equipped laboratory; the man in the street is prone to question the justice of paying better wages to a foreman than the hands receive.

When automobile building first assumed the proportions of a genuine industry, the laboratory was unknown and unnecessary. The only materials available were those already known in established manufacturing lines, and they were fairly well standardized, according to the contemporary understanding of the word. Steel mills and foundries placed their products on the market as suitable for certain more or less specific purposes, and the early automobile

manufacturer took them more or less on trust.

With the rapid development of automobile engineering, however, came a demand for specialized materials. Special steels, aluminums and bronzes were produced until the resources of metallurgical specialists were taxed to the utmost. Then competition, which is responsible for most of the developments the world has seen, forced some of the more progressive automobile builders to undertake some investigations of their own along the same line. Competition also made it desirable and even necessary to evolve a method of checking up the claims of different material producers, while purely business considerations rendered it desirable to buy material not merely by name, but by definite specification.

That was the genesis of the engineering laboratory in the automobile factory. Today some of the more prominent concerns in the industry maintain as complete and active testing departments for the study of materials alone as do the large steel mills. Many companies rely on independent laboratories for making their determinations. The testing of materials constitutes an industry in itself, a work of and for specialists. Therefore, just as some manufacturers find it more profitable to buy certain components in the open market, or to have them built to specification by parts makers than to produce them themselves, so many manufacturers deem it expedient to have their material testing done outside the factory. Others prefer the policy of concentration, and have established and equipped testing plants that are astonishingly elaborate and astonishingly complete in the range of their work.

The work of the testing laboratory is two-fold in its purpose—it is, first of all, constructive, that is to say, determinations are made with a view to selecting the grade of material most suitable for certain definite uses; and also with a view to regulating the heat treatment of steels which has become a very delicate and important part of the work of the modern engineering department. The secondary purpose of the laboratory is to maintain a constant oversight of all materials used in the plant in order to ensure uniformity of results. Investigations covering this class of work are of two sorts—physical and chemical. In the physical laboratory special machinery is installed, the purpose of which is to impose heavy strains of various sorts on specimen test pieces and at the same time to weigh the strain or load while detecting the outward effect of elongation, contraction, bending or breaking. In the chemical laboratory metals are reduced to their basic elements by the most delicate of processes and quantitative analyses made to the last degree of accuracy. The determinations of the two branches of investigation yield not only exact knowledge of the composition

and properties of the samples, but also afford an index of the way they should be handled in order to yield desired results.

To the individual accustomed to regard materials only in the absolute sense, it is difficult to convey an exact idea of what is involved in work of this character. If steel be regarded merely as steel, iron as iron, copper as copper and brass as an alloy of copper, tin and zinc, it is not easy to explain without tedious detail that steel may be of many different varieties and properties, and that there are like distinctions between various grades of iron, copper and the various alloys of these and other materials. Suffice it to say that an exact chemical analysis of its constituents serves to show what may be expected of a given metal in a general way, but that, in the case of steels in particular, it is necessary to supplement such information with dynamic tests in order to secure a full working knowledge of the sample.

Furthermore, as is perhaps not clear to the lay mind, great dependence is placed on heat treatment in the fully equipped automobile plant. Heat treatment likewise is a baffling subject to touch upon; the old word tempering does not adequately express the idea, though it comes near to it. But while the old methods of tempering metals, or hardening them and subsequently "drawing" the temper to the desired degree, were inexact and dependent largely upon the individual skill of the workman, modern heat treatment is entirely a matter of definite, finely regulated processes. To carry it out intelligently, however, demands that the processes be checked against physical tests constantly in order to guard against irregularities either in the metal or in its treatment.

In the testing department of the Pierce Arrow Motor Car Co., of Buffalo, to take a single illustration, approximately 1,000 physical tests and 5,000 chemical determinations are made annually. A great deal of the work done is in quantitative analyses of new materials, but within the past few years an increasing amount of attention has been paid to determinations of the constituents of castings and forgings purchased in the open market. This is done, it is explained, not so much for the purpose of checking the producers of such materials through any fear that they will slight their work as to detect unwitting mistakes and as an aid to the heat-treating department. Close records are made of all physical tests and determinations, and these are kept in both the superintendent's and laboratory offices and in the engineer's department. The heat-treatment department also reports regularly to the laboratory, so that a complete record is kept on all materials that go into the cars.

As to the exact nature of the operations carried on, it is impossible to go into details. In some of the factories where laboratories are maintained, their work is regard-

ed as being equally sacred with that of the model rooms, besides, the processes are complete, highly technical and variable with the exact nature of the work, and the application of the work. Furthermore, the operations are as free from spectacular interest as they are involved. In what looks

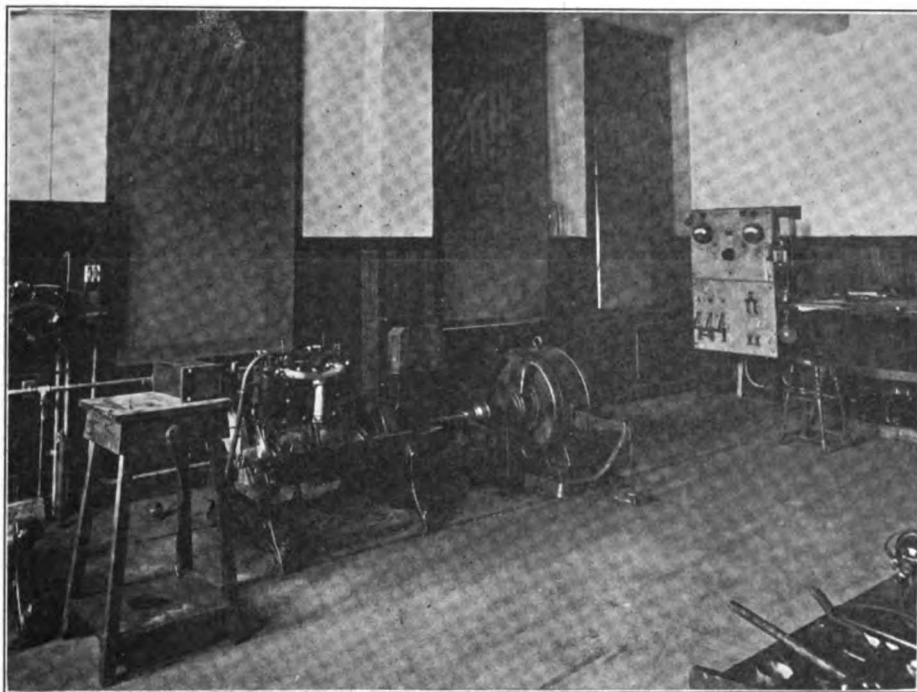
mate strength of the metal. There are also endurance and impact testing machines, the scleroscope, a dainty little instrument for determining hardness by measuring the height to which a tiny ball rebounds from the test piece when falling from a definite height; and other apparatus which is suited

ponent groups with a view to ascertaining either their suitability for use under certain conditions or their durability.

Thus in one factory laboratory it was found at one time that by altering the setting of the magneto an increase of nearly 8 per cent. in the horsepower of the motor could be obtained. For a test of this nature an engine is mounted in the cradle of a special dynamometer and run under established conditions for long periods. During such tests its fuel is accurately weighed, its power measured, its speed and the carburetter adjustments noted, as well as the temperature rise in the cooling water, atmospheric and barometric conditions. Frequently the manograph is employed to secure a photographic record of the cylinder pressures at every point in the cycle. All the data obtained in this way are carefully recorded and filed.

From the results of such tests it is possible to discover otherwise unsuspected sources of power loss in the motor, to determine the correct settings for carburetters, ignition apparatus and valves; to compare the performance of rival types of such devices as may be on the market and to check up the work of the engineer and designer in regard to the performance of new developments.

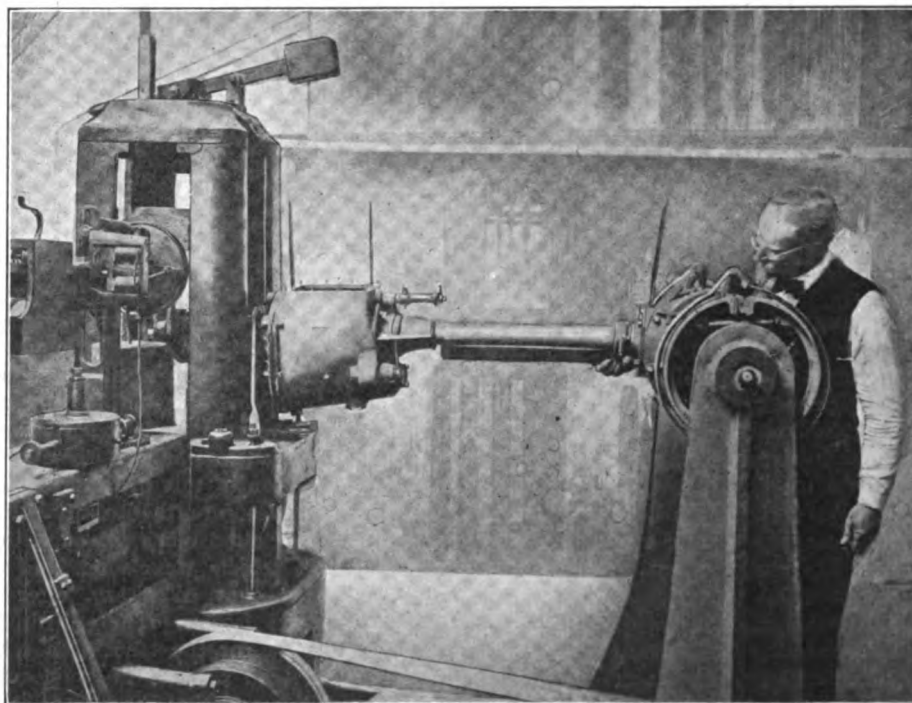
In a similar way axles, wheels, frames, bearings and other parts and equipment are tested with absolute exactitude to ascertain



REO MOTOR UNDERGOING A LABORATORY TEST

for all the world like the back room of a corner drug store one or two men are revealed to the privileged observer fussing about with test tubes, retorts, burettes, pipettes and the other paraphernalia dear to the heart of the chemist, or patiently observing the swinging pointer of a delicate balance. A few solutions and a pinch or two of a dry powder now and then are all that reward their work. But accurately measured and weighed they express the percentages of this or that ingredient in the metal, and indicate exactly what may be expected of it in service.

In the physical laboratory likewise the actual processes are somewhat prosaic in their nature. Certain standard specimen pieces, looking exactly alike, but differing in the composition or temper of the metals, are grasped between powerful jaws and subjected to enormous stresses. Under strain they stretch or deflect, and the relation between such deflection and the actual load imposed is compared with the deflection of other pieces under corresponding circumstances. By alternately imposing and releasing the load, increasing it to a greater amount each time, a point at length is reached where the piece no longer regains its original shape when the strain is released. The corresponding load, expressed in pounds per square inch of area, represents the limit of elasticity of the metal. Similarly the breaking point is found and yields an expression for the ulti-



SPECIAL TEST OF RAMBLER TRANSMISSION AND AXLE

to special tests of one sort and another.

There remains still another phase of experimental work to which a great deal of time and expense is devoted in the modern factory and which also is both non-productive and highly scientific in its nature. That is the testing of materials, parts and com-

their efficiency and applicability to certain uses. Another sort of test which is carried out is that of subjecting certain parts or groups of parts to stresses such as they might be expected to experience in regular service in order to determine their ultimate strength. In one of the accompany-

ing illustrations a typical test of the sort is shown.

The object in this case to determine the resisting power of the torsion tube, driving shaft and rear axle of a Rambler car. The ends of the axle being firmly anchored to the floor, a twisting stress is imposed on the forward end of the group at a point $2\frac{1}{4}$ inches from the center, or equal to the radius of the engine-crank shaft. By means of three pointers erected on the gear case and rear-axle housing the amount of deflection can be ascertained. By locking the gears it is possible also to exert the full force of the testing machine in distorting the torsion tube.

By such methods it is possible to determine how much greater stresses the parts will stand than those which have been calculated as their normal loads. This furnishes a check on the designer as well as on the production departments of the plant. Such specific tests, of course, can be multiplied almost without number and applied to every portion of the car; to individual parts and to assembled groups. The result is that every portion of the machine is tested not once but many times.

The object of all research work such as has become a fixed element in automobile production today is the predetermination of facts which formerly could be ascertained only by exhaustive trials on the road. frequently only after many cars had reached the hands of their owners. Carrying out the old adage about being forewarned, the modern motor-car builder takes the utmost precautions to forearm himself against the difficulties which beset him in the early days. The old-time road tester, in the halcyon pioneer days of as much as nine or ten years ago, used to be sent out with instructions to "bust it or fix it." On his gentle word hung the fate of each car, often the fate of a model, if not of a line.

The testing of the present day also is carried out on the destructive principle. The model chassis is run till something gives way; the Riehle or the Olsen testing machine is called into requisition to bend or break an axle, a connecting rod or a steering arm; the motor may be run continuously for days and then torn down and measured for wear; the testing machines go on day after day snapping little test bars in two; the chemists putter about with their solutions destroying the very fabric of the metal; the metallurgists study fractures under the microscope and sort them into grades—all at tremendous expense, and all with method and purpose. The joys of road testing under the old plan have largely disappeared under the new regime. But the master builder knows his car as he never knew it before, because he has looked into its very vitals with the eyes of modern science; he does not wait to find out what it will withstand on the road—he learns pretty well in advance.

THE MOTOR WORLD

WIND WAGON TAKES TO THE ICE

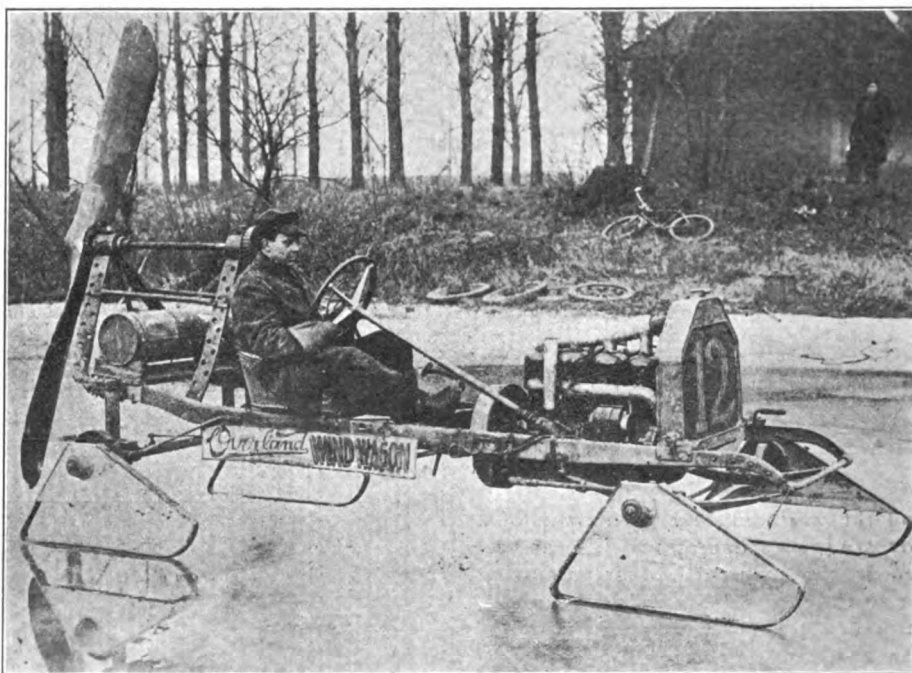
Exchanges Wheels for Runners and Demonstrates that It Can "Go Some"—
Test on a Frozen Ohio River.

It is a well-known fact among scientists that the species genus homo is not alone in its love for the "cup that cheers," and it has been variously stated at different times that "three fingers of Scotch" in the gasoline tank has been productive of unusual energy on the part of an automobile. But no self-respecting automobile has

skates of the usual pattern could hope to hold its pace in a brush.

The Sort of People That Buy Cars.

In order to settle in his own mind the oft-asked question, "What sort of people are buying automobiles?" Charles T. Jeffery, head of the Thomas B. Jeffery Co., recently instituted inquiry, taking as a basis 400 sales of Ramblers which had been made during a limited period of 1910. The sales were reported as soon as consummated, and as they came from widely separated sections of the country they may be said to have been taken at random from those 25,000 sales which were made to Rambler buyers



OVERLAND WIND WAGON WITH ITS SKATES ON

yet been accused of such an addiction to "hard drink" that it would actually "get a skate on." And still that this somewhat paradoxical statement is true is abundantly proven by the accompanying illustration of the Overland "Wind Wagon." From time immemorial inventors have been chasing the chimera of an amphibious vehicle, and while the solution of this problem remains as elusive as heretofore, the inventor of the "Wind Wagon" almost has solved it in as much as this vehicle travels on land and also on water—that is to say, after the water has been frozen. The substitution of steel runners for the wheels on which it travels on land permits of rapid travel on ice, and it is said that the testers at the Overland factory have great sport "skating" on the river when the ice is thick enough; and that the change from wheels to skates and vice versa is not a difficult one, is indicated by the wheels reposing at the water-side.

As a speed of upwards of 40 miles an hour is claimed for the "Wind Wagon," it is improbable that any ordinary mortal on

during the year. Practically every section of the Union was represented.

The occupations of these 400 buyers proved to be as follows: Bankers, 43; doctors, 24; merchants, 97; real estate dealers, 30; lawyers, 8; farmers, 76; architects, 3; manufacturers, 26; contractors, 11; engineers, 4; retired capitalists and miscellaneous, 88. Among the merchants are men in varied business pursuits, and those classed as farmers include ranchmen and fruit growers also.

Truck Runs Seven Days Without Stopping.

After having been run continuously for seven days and ten minutes, an Alco truck which at 12:10 o'clock Monday, 16th inst., started in New York on a non-stop performance, wound up in Philadelphia and its motor finally was stopped at 12:20 p. m. on Monday, 23d. During its run of 168 hours it completed 1,009.4 miles, most of which was on New York streets. The truck empty weighed 7,050 pounds and loaded 13,120 pounds. It was weighed at the start and at the finish and several times between.

MAIDS WHO RIDE WITH CHAUFFEURS

**They Cannot Recover Damages if Injured,
Says New York Court—Fellow-Servant
Law Receives First Test.**

The famous "fellow servant clause" of the employer's liability act has scored its first victory in an automobile accident case argued before the Appellate Division of the Supreme Court, of New York State. Maxi Erjauscheck, a maid employed by C. Otto Kramer, of Buffalo, lost \$1,200 damages which had been awarded to her by a jury in the Supreme Court for injuries sustained by being thrown from an automobile belonging to her employer. This is the first case of this kind which has reached the Appellate Division, and therefore is certain to be cited as precedent in similar cases in the future.

In presenting his view of the matter, counsel for the maid, tried to show that the chauffeur was the servant of the defendant (Kramer), while the maid was the servant of Kramer's wife, and that therefore the fellow-servant clause should not be applied. He also called attention to the tendency of the time to abrogate the fellow-servants' doctrine.

In arguing for the reversal of the verdict Kramer's counsel contended that the maid was a fellow servant and that the fact that the character of the duties performed by the servant causing the accident and by the servant injured is widely dissimilar, does not affect the rules as to fellow servants.

There was no question raised on the trial as to the competency of the chauffeur; nor was there any claim of personal negligence on the defendant's part.

The question therefore arose: Assuming that there was proof to show negligence on the part of the chauffeur, were the maid and the chauffeur fellow servants within the rule which exempts the master from liability to one servant for the negligence of another?

The higher court took the affirmative view and reversed the jury's verdict.

Reciprocity Fight Reopens in New Jersey.

The effort to make New Jersey a part of the Union by permitting its roads to be used by the residents of other states without payment of an "admission fee" has again been undertaken, the Edge bill, having that object in view, having been introduced into the legislature. It provides for the use of New Jersey roads by automobiles from the other states for a period of 15 days yearly, on a reciprocity basis. It has the unqualified endorsement of the majority of automobile owners of the Mosquito State, and is said to have sufficient votes to assure its passage. The old opponents of the measure, however, have been on the

alert and are determined to fight any concession. The latest body to declare against reciprocity is the State Board of Agriculture, which, at its meeting last Friday, the 20th inst., put itself on record as against any such legislation. This action of the board can hardly be said to be a surprise, inasmuch as that old enemy of sane automobile legislation, Joseph S. Frelinghuysen, the carpet-bag senator, had been named president of the board in place of Dr. Voorhees, who retired on account of ill health.

Albany Club Shows It is "Real Angry."

The Albany Automobile Club, which last fall withdrew from the New York State Automobile Association, and, perforce, from the A. A. A., chiefly, it is said, because of dislike for or difference of opinion with an official of the State organization, held a meeting last week apparently to show that it was "real mad," and for the time-worn purpose of "putting the A. A. A. out of business." Troy, which is "across the street" from Albany, and several other cities were represented, some of them mainly to discover what Secretary Fitzgerald, the Albany leader, had on his mind. The most interesting figure at the gathering, however, was Fred Elliott, who drew many good round dollars from the A. A. A. treasury as secretary of the national organization, but who now comprises something like 33⅓ per cent. of the so-called and privately-owned Touring Club of America, which would make more money for its owners if the A. A. A. were not in existence. Elliott indulged in considerable conversation, but the meeting really accomplished nothing. The Albany Club, however, will, it is stated, "attack the legislative situation in vigorous fashion" and introduce a batch of bills "all by its lonesome."

Alabama Adding to Cost of Motoring.

If the new automobile bill introduced in the Alabama State Legislature becomes a law, which according to reports practically is certain to be the case, it will be more expensive to drive a motor car over the bad roads of that Southern state than over the finely graded highways of most of the Eastern states. The bill provides for state registration, the fee being graded according to horsepower: Less than 20 horsepower, \$7.50; between 20 and 30 horsepower, \$12.50; over 30 horsepower and less than 40 horsepower, \$17.50; 40 horsepower and over, \$22.50. The bill, if enacted, will go into effect on October 1 next.

Step Mats That Prevent Slipping.

Step mats for use on running boards during wet or muddy weather are becoming common abroad. They differ from the usual corrugated metal or rubber matting which is apt to become slippery, in that they are thick, with a rough raised surface, so that it is practically impossible to slip or slide on them.

MOTOR MAIL DELIVERY SUPERIOR

**But Uncle Sam's Short-Time Contracts
Check Its Growth—Federal Post Office
Official Reviews Situation.**

In his annual report rendered last week, First Assistant Postmaster General Garfield, whose jurisdiction includes the delivery service in the city of Washington, states that although the expense of automobile mail collection is more in proportion than the same service performed by horse-drawn vehicles, it is more than offset by the saving in carriers' salaries, not to mention the great saving in time.

"It is estimated," continues Mr. Garfield, "that one automobile under contract manned by one carrier operating in residential and outlying districts will perform nearly as much service as three mounted carriers."

Automobiles are used at the present time for the collection of mails in Boston, Philadelphia and Columbus, Ohio, having been but recently installed in the latter city. Until the expiration of the yearly contracts, automobile service was in vogue also in Buffalo, N. Y., and Washington, D. C., but when new bids were advertised for none that were satisfactory were received.

One thing that seriously hampers the automobile in postoffice service, according to the assistant postmaster general, is the fact that the law is such that no contracts of more than one year's duration may be entered into. This makes the contractors unable to plan for the future, and as a result they are unwilling to purchase any large number of machines or to equip a repair shop and engage good machines.

"If contracts could be made for periods of more than one year, no doubt much better results could be obtained and at a less cost," says the assistant postmaster general. "With automobiles more frequent return trips can be made to the office, thus permitting earlier dispatch of the mail to its destination, and a more even distribution of the work in the mailing division, and preventing congestion, which occurs when a large amount of matter is brought in about the same time from long trips."

In addition to the cities where the automobile is now used for mail delivery, Mr. Garfield further remarks that the service may be extended to other cities where conditions are favorable, and adds that if manufacturers will build cars with motive power which will withstand the wear of frequent starting and stopping, bidders will be able to offer better terms and less trouble will be experienced in having uninterrupted service.

The figures for the cost of automobile service have not been made public, but the cost of the horse-drawn vehicles for the past year was \$824,653.90. In all contracts for

mail collection have been let in 26 cities, 19 of them for horse-drawn vehicles and seven for automobiles. It is understood that in the cities where the automobiles are in use the service has proved much more economical than has the horse wagon where conditions exist that are practically the same.

Republic of Panama Unkind to Motorists.

That the government of Panama is not very kindly disposed toward automobile owners is the substance of a New York dealer's tale of sorrow, after he had paid a visit to the Canal Zone. The authorities of the republic of Panama have put an impost of \$150 on every automobile brought over the border line, and, he says, so has

TO BRING DOWN THE SKY SCOUTS

**Germany's Famous Gun Makers Evolve
Artillery Designed for the Purpose—
Two Types Ready for Action.**

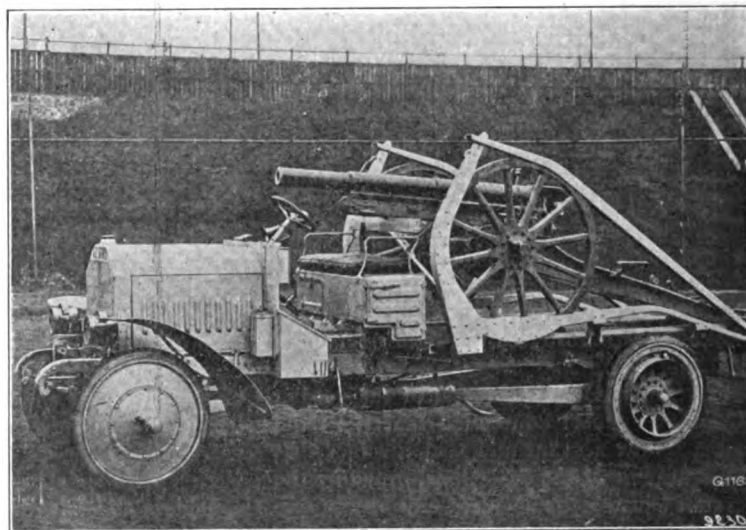
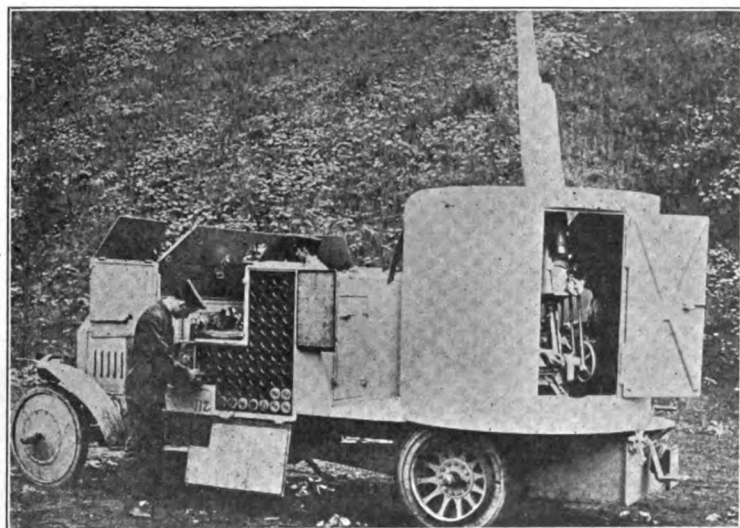
Used practically from its inception, the automobile is far from new in the field embraced by modern warfare, and lately has reached a prominent place as an auxiliary in the preparations for war which every nation eternally is making, despite the talk of universal disarmament and the flutterings of the dove of peace. Taken more seriously abroad, however, the science of defense is keeping pace with the science of

siles, forms a very effective movable fort.

A novel method of mounting a field piece is shown in the other illustration, and consists of two skids appending from the rear of the chassis and up which the gun is rolled when it is desired to move it to some distant location. After the gun has reached its temporary resting place against the two arm-like projections behind the driver's seat, the skids are folded up and over the gun carriage wheels and locked in this position, thus holding the gun firmly in place until it is necessary to dismount it when the operation is reversed.

Motor Cars to Test Bulls' Fighting Blood.

That the automobile can be used with great success in determining the courage



KRUPP "BATTLE CARS," DESIGNED TO COPE WITH THE SKY-FIGHTERS.

the government of the Canal Zone. The result is that every time an automobile crosses the border line, the owner has to pay \$150, whether he intends to stay or not. This particular dealer, thinking the impost duty had been lifted, took a number of taxicabs and touring cars to the isthmus, but was compelled to take them back with him on account of the regulations, as the amount demanded would have been almost confiscatory in its effect upon intended motor livery business.

Garage as an Adjunct of Business.

Erected for the private use of the officials and employes of the Johnson & Johnson Chemical Works, at New Brunswick, N. J., the new garage of this concern enjoys a distinction among similar structures. A small vacant building had been used for that purpose, but the motorists connected with that concern grew in number until a more up-to-date and more spacious building was necessary and one was erected. The new garage is said to be modern in every respect. There is a shower bath and dressing rooms for the chauffeurs. Help is employed to care for the machines of those who visit the plant on business.

offense, the latest adjunct to the game of war being an automobile to carry a rapid-fire gun designed for use against the most modern of vehicles, the aeroplane. For effective work against aerial craft, the guns, in addition to being vertically or horizontally aimed, must be moved quickly from place to place until the most advantageous point for attack is found. The most practicable way of doing this is by means of high-powered motor cars.

The one shown in the accompanying illustrations in two "body" styles has been specially constructed for the transportation of the new guns recently brought out by the Krupp firm, and is of particularly heavy construction. The front wheels are of the disk type, and are shod with single solid rubber tires, the rear wheels being of the conventional wooden artillery type with dual tires. To permit of rapid travel over rough country, where bad roads are the rule rather than the exception, and as often as not no roads at all are encountered, a powerful motor is used. In one of the illustrations the automobile is shown armored and permanently mounted with one of the new guns, which, with its complement of tools, supplies and death dealing mis-

of young bulls intended for the bull ring has been demonstrated by Pedro Fernandez Somellera on his hacienda in Mexico, according to the glowing tale coming from San Isidro, Mexico. On all haciendas, where fighting bulls are raised, the young animals are "tested" with a view of determining their future fitness for the bull ring. Those that prove their courage are marked and left to grow up for future contests. Up to this time the tests have been conducted by men on horseback armed with long pikes, like picadors. But Senor Somellera, who is described as an enthusiastic motorist, this year tried an innovation by introducing his 25 horsepower motor car in place of the horsemen. After the young bulls had been herded into a large corral, the automobile was driven into the inclosure. The occupants were armed with the usual pikes. The experiment proved an exciting success, several of the young bulls charging the car at mad speed, and it was only by the cleverest kind of driving that the car and its occupants were kept clear of the horns of the surprised and highly indignant animals. The bulls that attempted to mix it with the automobile were picked out as especially brave.

The Logic of the Long Stroke Motor

It is pretty generally understood that the long-stroke motor, so-called, is more or less a foreign importation insofar as it applies to automobile practice, and that its development abroad has been influenced largely by the question of taxation. But while it is true that when taxes are based on cylinder bore alone, or on fuel consumption, the tendency is to encourage the development of the stroke dimension of the engine, there are a number of other and equally important reasons that have led engineers in general, and particularly the more serious of American engineers, to espouse the type in more or less radical form. These considerations are indicated in non-mathematical terminology by Edward A. Myers, of the Model Gas Engine Works, Peru, Ind., in a paper prepared for the recent annual meeting of the Society of Automobile Engineers.

Generally speaking, the long-stroke engine is regarded as a heavier engine than one of short-stroke dimensions, but Myers indicates that such is not necessarily the case; indeed, the lighter weight per horsepower of the type in question is one of its advantages in his estimation. The five points in its favor which he enumerates are the following:

"A motor much lighter in weight for a given horsepower; a motor of longer life; a motor more economical in the use of fuel; a motor requiring less radiating surface for cooling, and a motor of smoother running qualities and less noise."

The Model company is one of the older builders of gas engines in this country, and its experience offers ripe information on the subject, information upon which the author draws liberally in expressing his conclusions. Fifteen years ago, for example, its first line of single-cylinder stationary engines was designed and built after what now would be termed the medium-short-stroke pattern. They were produced in sizes ranging from 5×6 , $6 \times 7\frac{1}{2}$ and $7\frac{3}{4} \times 10$, up to $12\frac{1}{2} \times 18$, 15×22 and 17×26 inches bore and stroke. After four or five years a series of long-stroke, single-cylinder engines were produced ranging from $4\frac{1}{2} \times 7$, 5×8 and 6×9 , up to 13×22 , $15\frac{1}{2} \times 26$ and 17×30 inches respectively. Eight years ago the double-opposed type was produced for a short time, the three sizes built having bore and stroke dimensions respectively of $4\frac{1}{2} \times 7$, 5×5 and 5×7 inches. Seven years ago the four-cylinder style of engine was taken up and has been produced in no less than 20 sizes which range in slightly varying ratios of bore and stroke from $3\frac{1}{2} \times 4\frac{1}{2}$ up to $16\frac{1}{2} \times 26$ inches.

"Of the four-cylinder motors," says the authority in question, "we have been using all sizes up to and including 8×14 for pleasure vehicles, commercial vehicles and tractor work in general, including considerable railway locomotive work." But more particularly with reference to the comparison of long and short strokes under discussion he cites one instance of an engine of 10×18 inches bore and stroke which was designed to replace an 11×15 -inch engine of an earlier type. "It weighed about 1,500 less," he says, "and was built for 25 horsepower at a speed of 265 revolutions per minute, or a piston speed of 795 feet per minute."

"Thorough test showed this engine would develop 40 horsepower on a smaller consumption of fuel than that on which the 11×15 would develop 22 horsepower," he continues; "also that the efficiency of this engine continued to increase as the piston speed increased up to 850 feet per minute, at which speed it proved to develop a horsepower on the least amount of fuel. It is interesting to note that when the bore of the cylinder was reduced, the crankshaft and all other parts were correspondingly reduced in size with a decrease in weight of about 1,500 pounds. After 10 years' service under all conditions it has been shown clearly that it is much more durable and costs less for repairs than the shorter stroke engine."

"We might go through the entire list and make a comparison of what was accomplished with long and short-stroke motors," he adds, "but it is enough to state here that the results were all in line with the case we have just cited."

Taking up the advantages which have been enumerated already, Myers proceeds directly to the misunderstood question of weight.

"It seems to be the prevailing opinion that the long-stroke motor is of heavier design," he remarks. "Our experience has been exactly the opposite. For an illustration, take a 4×4 motor of modern construction. It is a bad design, indeed, if any good designer cannot copy it, changing it to a $4 \times 5\frac{1}{2}$, making a motor of a long life at an increased weight of from 5 to 10 per cent. In making the change he will get an increase in power of from 25 to 35 per cent, at the same number of revolutions per minute. He will not have increased the initial pressure on the piston head, the shock caused by the instantaneous expansion of the gases at the beginning of the stroke, or the pressure on the bearings. Hence there is no occasion for increasing

the thickness of the piston head, cylinder walls or other parts.

"The advocate of the short-stroke motor will at once reply that he will simply increase the speed of the motor until he gets the same piston speed and will then get the same power. At first glance it seems that he is right from a theoretical standpoint. But such is not the case. Neither is he correct from a practical standpoint. In the first place, the greater the speed of the motor, the more power is required to propel the motor itself. We must not lose sight of the indicated and actual horsepower and the fact that the power required to drive the motor itself must be considered as lost. It should be quite clear that it will require more power to turn the 4×4 motor a greater number of revolution per minute to get the same piston speed as the $4 \times 5\frac{1}{2}$. Hence, if there were no other advantage, this increased frictional loss would prevent the securing of the same power from the shorter stroke motor."

"There is a speed at which every motor will produce the most power for the amount of fuel consumed. It will be found that the actual pull in pounds will increase with the speed of the motor up to a given point, when the pull in pounds will begin to decrease. If the speed is increased beyond this point the motor will continue to develop more power, but not in proportion to the increase in speed; hence, at a greater fuel consumption."

"On the other hand, below the speed at which the pull in pounds is greatest the horsepower is not only less, but the fuel consumption is greater per horsepower developed. If you test this out fully you will find that the highest point of efficiency is at a higher piston speed on a long-stroke than on a short-stroke motor."

"The long stroke motor of a given horsepower has a smaller cylinder diameter, and, as the initial pressure on the piston head is practically the same in both long or short-stroke construction, if there is no difference in the diameter of the cylinders, it is clear that the actual pressure on the piston head in the motor of smaller diameter and longer stroke will be less than in that of larger diameter and shorter stroke, and as a natural result the shock caused by the quick expansion of the gases at the beginning of the stroke is less in the smaller diameter; the work on the bearings being not so severe. In the short-stroke motor practically all parts, with the exception of the piston, must move faster. This, together with the number of reversals of direction of motion per unit of time, must necessarily mean

more wear on bearings, valves, valve stems and cams. If we can reduce the temperature of the burned gases as they are permitted to escape through the exhaust valve (which is accomplished with the long-stroke motor), we thereby reduce the cause for regrinding to that extent.

"From a given quantity of fuel we get so many heat units, the distribution of which we might divide under the following heads: Friction losses; loss by reason of heat carried off through the cylinder walls; loss through the exhaust; amount converted into power. If we are correct as to frictional loss above mentioned, this alone would make the long stroke motor more economical, were there no other losses.

"It has been stated frequently by very able men that the loss through radiation or through the cylinder walls of a short-stroke motor was less than in the long-stroke motor, and that for this reason the former was more economical of fuel. In this opinion we can in no way concur.

"This argument is based upon the theory that the stroke being longer, more of the cylinder wall is exposed, and as a result there is more chance for the heat to be carried off through that part of the cylinder swept by the piston. If this were true, the loss would still be less than on the short-stroke motor with the larger bore, for the reason that the compression chamber on the larger bore leaves a greater exposure of wall surface. Again, this greater wall exposure in the compression chamber occurs when the compression is at the highest possible point; while with the long-stroke motor that part of the cylinder wall swept by the piston, by reason of the longer stroke, is not exposed until the pressure has reached the lowest possible point. Hence the loss would not be so great even with an increased wall exposure in the longer stroke.

"In order that we may properly understand this, we must get some idea of the capacity of the cylinder walls for absorbing and carrying off heat. Let us assume that we have a proper mixture of gas and air confined in the compression chamber of the cylinder of a properly constructed motor, with all valves closed, no leaks of any kind, piston immovable, compression 60 to 70 pounds, and the charge ignited. Under these conditions it will be seen that no heat can be converted into work, no frictional loss and no loss by means of exhaust; in fact, no escape except through the cylinder walls. Let us further assume that when this charge is ignited, it will immediately expand and create a pressure within the compression chamber of from 300 to 500 pounds per square inch. If we were to ask the man who had not given this matter careful thought, or had made no practical test conditions for a sufficient amount of this heat to be carried off through the cylinder walls to reduce the pressure within to 100 pounds, he would more than

likely say from five to ten minutes. If we were to tell him that as a matter of fact it will take less than two seconds, he would either not believe it or would at once begin to realize what high piston speed means when it comes to a question of economy. It is thus seen that when we increase the piston speed, there is less time for the heat to be carried off through the cylinder walls, and as a result, more of it is converted into work. When this is done by means of increasing the stroke, there is but little frictional increase, and a clear gain in power, with less fuel consumption.

"It has also been demonstrated that with the longer stroke the compression can be increased over that of the short-stroke motor, without any of the bad effects or disadvantages of too high compression. Increased compression is another step toward more economical operation.

"It is evident that the further you expand the gases, the less heat will be carried off through the exhaust. Observation of the exhaust alone from a long and short-stroke motor, both properly constructed, should be sufficient to satisfy the mind that the exhaust gases can be permitted to escape under a lower pressure with the long-stroke motor; a properly taken indicator card will show this clearly.

"Smoother running qualities and less noise are secured in the long-stroke motor because of the fact that the initial impulse is much less. The pressure on the piston is the same whether the motor has a four-inch or six-inch stroke, if the diameter and compression in both are the same. If we must use the larger bore, in order to secure the same power, we must expect the natural results of a larger motor, or of a larger cylinder diameter with the same stroke. The noise must necessarily be increased when the motor is running at a greater number of revolutions, because of the increased speed of opening and closing valves, and the movement of the other parts of the motor.

"Again, it is a well-known fact that with the long-stroke motor you secure better mixing and vaporizing of the charge. You can throttle the motor down lower, so that it will pull much more steadily, quietly and smoothly on hills or on slow speed under heavy load. It is not difficult to see that the further gases are expanded, the less noise will be created by the escape of the exhaust gas; likewise, that exhaust valves will open against pressure.

"We have not gone into the question of what we consider the best proportion of the stroke to the bore for the simple reason that so much depends on the work for which the motor is to be used. What may be ideal in one case may be all wrong in another. Where you have a given number of revolutions per minute, as in stationary work, the better practice is to use the longest stroke possible, consistent with a smooth running engine. Where you must have variable speed, the better practice, in

our opinion, is to have the stroke such that the piston speed will be at a point showing the greatest efficiency at the number of revolutions per minute at which the motor will be more generally used. Generally speaking, for motors used for work requiring a variable speed, the smaller the motor the greater the stroke can be in proportion to the bore.

"In speaking of the proper proportion of the bore to the stroke, depending on the work of the motor, we desire to make it clear that we believe the advantages of the long-stroke motor are much more essential to the construction of good commercial vehicles than pleasure vehicles, because of the wide speed variation. With the truck or commercial vehicle the conditions are different from those of the pleasure vehicle. The governor is now being used in the transmission for increasing the speed of the car when running light. Hence the motor can be operated more nearly at the piston speed at which it will give the most economical results.

"Regardless of how far we may go in the future in the increase of the stroke of motors used for pleasure vehicles, we are firmly convinced that the motor with the bore equal or nearly equal to the stroke will very soon be a thing of the past for the truck or commercial car."

Book That Deals With Ball Bearings.

Constituting rather more an exhausting treatise on ball bearing construction than a mere trade list, the new catalog which just has been issued by the Hess-Bright Manufacturing Co., Philadelphia, Pa., is in the nature of an astonishing revelation of the extent to which one of the purely subsidiary developments of the automobile industry has developed. Of course, the marketing of the Hess-Bright bearings is not confined solely to the automobile industry, but as that line of activity affords a large proportion of its demand, it rightfully may be termed an off-shoot of automobile evolution. The catalog affords an instructive exposition of the principles and methods of precision governing ball bearing construction as applied in the "H. B." and the parent, "D. W. F." products. It explains the manifold applications of the bearings in various sorts of machinery, automobile machinery in particular, and, in a supplementary way, lists the various sizes and styles of bearing which are regularly made for different purposes. It will be found, in fact, a deal more useful than the ordinary publication of its class.

Lubricating Oil for Locating Leaks.

Valve leaks may be located if a small amount of oil is poured around the valve. If bubbles appear or if air and gas escape while the motor is running, it is evidence of a leak. Any leaks around spark plugs, evident by a slight hissing, may be definitely located in this same manner.

Hugh Chalmers on Automobile Salesmanship

Selling automobiles is after all at bottom very much like selling anything else. It is a question of honest manufacture and honest representation. The technical terms of automobile salesmanship obviously are different from those of piano salesmanship for instance, but the fundamental principles are the same, says Hugh Chalmers, in an article dealing with the subject of "Automobile Salesmanship."

I should say motor cars are a little bit harder to sell than most other commodities because the buyers of automobiles are of an unusually discerning class. This must necessarily be so, because the automobile is primarily the servant of the successful man.

A few years ago before the public had become educated in automobile values, almost anything which had four wheels and an engine could be sold as an automobile. Now the motor car which sells readily must have the same characteristics which sell certain kinds of pianos, soap, clothing, or anything else.

Perhaps the greatest feature in automobile salesmanship is reputation. After all, the thing which the public buys is a name. Most purchasers of motor cars know comparatively little about the technical features of gas engines, or of motor-car construction. The type of clutch, the style of ignition, the system of cooling, the method of gear change are things which make little difference to the user of a motor car, if he knows that the car he buys has a reputation for delivering the goods. No car should be bought because it has certain mechanical features; rather it should be bought because certain mechanical features have made it a serviceable, worth-while car.

It seems to me that automobile companies and salesmen should first of all try to build up a reputation for their cars. They should be able to guarantee to the customer one dollar's worth of actual service for every dollar invested in a car.

Sincerity of purpose, next to reputation is the most important thing in selling motor cars.

You must have honest goods to make successful sales. For, after all, the biggest thing in selling anything is to keep the customer sold after he has paid his money.

A lot of people think that selling automobiles is just another way of having a good time. Those of us who sell them know that this is not so. Selling automobiles is probably the hardest work a man can do. There are several reasons for this.

In the first place, I know of no industry in which competition is so keen. Only a

man of untiring energy, a man who is constantly "on the job," can hope to overcome this competition.

In the next place, even the lowest priced automobile represents a considerable expenditure. It is not always an easy task to convince a man that an investment of \$500 to \$5,000 will be profitable to him. We must spend a great deal of time teaching the public the utility, mechanical value, time-saving and pleasure-giving features of motor cars. The days when an automobile could be sold during a champagne dinner have passed.

A bad trait of some automobile salesmen is the belittling of a competitor's goods—that thing which is known as "knocking." I think this is one of the greatest mistakes made in selling motor cars. "Knocking" may get a sale, but it doesn't build a permanent business. Above everything else, I discourage this tendency among the salesmen of the Chalmers Motor Co.

Fair and honest comparison any salesman may make. This is necessary. It may be possible to demonstrate that the thing you sell is better than the thing another man sells, but that is no reason for saying that the competitor's article is not good. I honestly believe that "knocking" has lost more automobile sales than any other one thing.

I also wish to discourage price-cutting; the giving of extra equipment, rebates, etc. Price-cutting should be done when the price is first put on the car. No one wishes to deny a manufacturer or a salesman a legitimate profit. To that he is entitled. It is the foundation of all commercial enterprises. No man objects to paying for an honest return. There is always a reasonable doubt that he has got the rock-bottom price. He may quite justly feel that, if the price was even more for someone else. Such tactics never can be expected to build up a permanent and well-established business.

The automobile salesman should always have a thorough knowledge of his business. He should be able to answer every question which may be asked him, not only about his own car, but about other cars. I recall once having attended a convention of salesmen in Germany. At this convention was one man who had the reputation of being the best salesman in the German Empire. I had an interpreter call this star salesman upon the platform. I asked him why he was the best salesman in Germany, and he replied: "Because I defy any man in all of Germany to ask me any question about my business which I cannot answer." This is a wonderful thing for any

man to be able to say, and it is a wonderful thing in selling automobiles.

Perhaps more than any other class of salesmen, automobile salesmen need tact. Tact is a rare quality; hard to develop for a man who does not possess it naturally. Contrary to the belief of many men, tact is not "jolly." Tact is that quality which enables a man to do the right thing at the right time.

Almost every prospective purchaser of an automobile has given some considerable thought to the subject. He may be prepossessed in favor of some car. He may be looking at your car merely as a matter of investigation. The one way to sell him is to show tactfully that your car will give him greater service and greater value than the others cars he has seen, without antagonizing him.

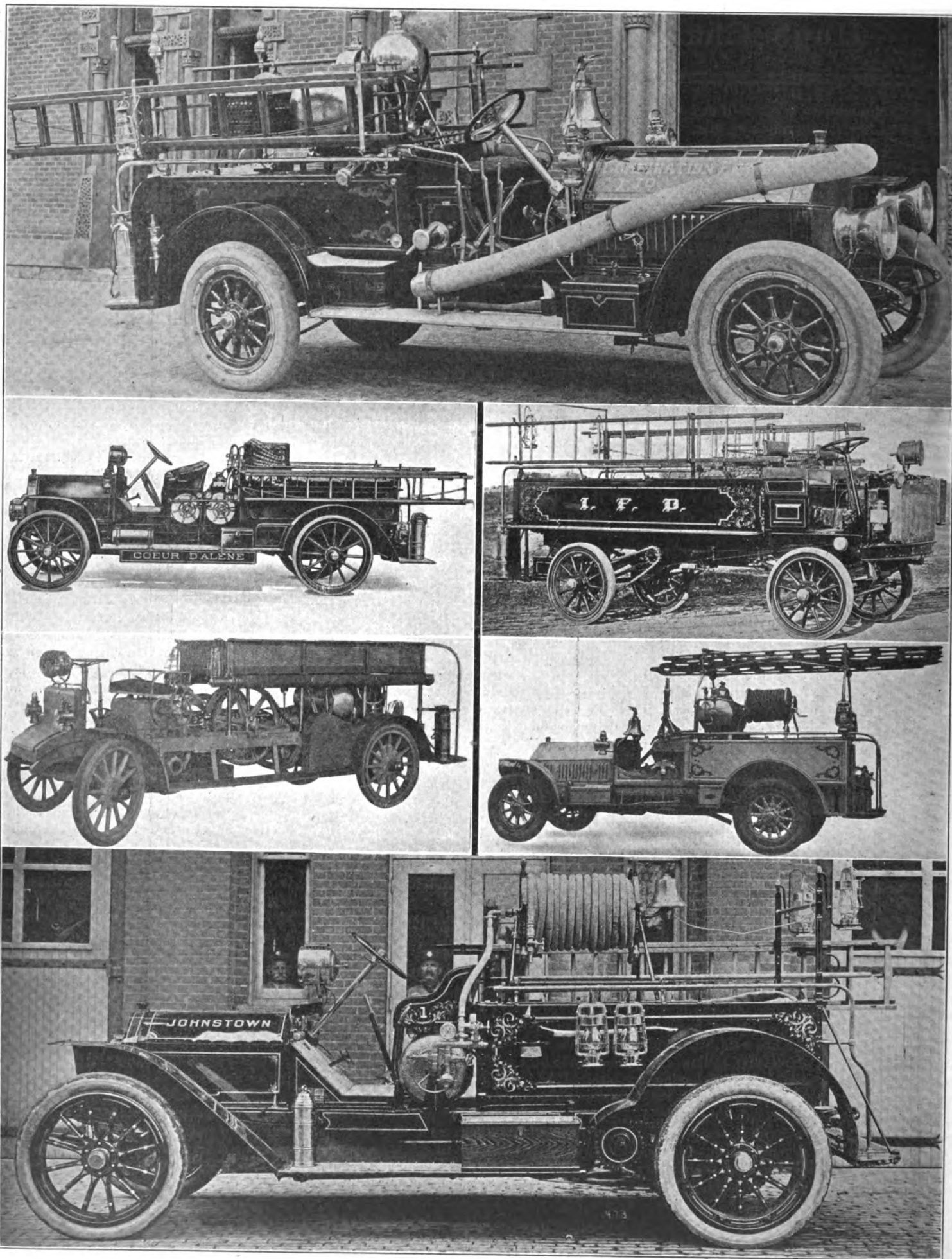
I should say that every successful automobile salesman must also have initiative to a very great degree.

In my experience I have found that there are three classes of men. The first class you can tell to do a thing with the absolute assurance that they will do just what you have told them. The second class you must tell a dozen times to do a thing, and even then you cannot be sure that they will do it right. The third class does the right thing before you have a chance to tell them to do it. They are the men with initiative. In automobile salesmanship this is absolutely essential. If automobiles were sold only to the people who come after them, about half of the companies in the country would have to go out of existence.

Clever automobile salesmanship is that which continually develops new markets! which shows initiative in seeking out prospective buyers and eventually selling to them.

The question of automobile salesmanship is of more vital importance to this country than is generally realized. A decade ago automobiles were almost unknown. In a few short years the industry has grown to be the third greatest in the world. I believe that it will continue to hold that prominent position. Almost the whole civilized world now appreciates that the motor car is the greatest servant man has ever built for himself. It will continue for countless years to occupy the position which it has attained.

Therefore, automobile salesmanship is quite as important a factor in the commercial life of today as any other type of salesmanship I can think of. It is something we would all do well to study and to take seriously.



How Gasolene Fire-Fighters Are Displacing the Horse

Gradually but irresistibly the motor-driven fire engine is coming into its own. Less than a year ago the chief of the New York fire department was able to say to a

opinion spells a victory which the automobile fire engine has won in a hard fight against conservatism, prejudice and false sentimentalism.

had serious defects and drawbacks which only now are recognized as such. Arriving at the scene of a fire, the pumping force had to be set in operation, and often the



THE KNOX COMBINATION PUMPING AND CHEMICAL FIRE ENGINE IN ACTION

representative of the Motor World that the motor-driven engine had not yet been tested sufficiently to permit of its wholesale installment in the Empire City, and that the reports which were current at that time relating to a change from the horse to the gasolene motor, were "mere talk." But within the last week the commissioner of the department and its real head has declared that no new horses will be bought for the use of the department—that they are to be replaced as speedily as possible by the more modern, more effective and, withal, more economical gasolene motor. This change of

Not merely in the Big City, but far and near, in this country and abroad, the motor-propelled fire engine thus is driving the horse from the field. Improvement after improvement has added to the perfection of the automobile fire apparatus, and from a mere propelling mechanism the motor has reached out and taken upon itself the duty of providing the pumping force necessary to drive the stream of water into the air to a height of five or six stories.

Before the advent of the gasolene motor the steam engine was considered the last word in fire-fighting apparatus, and yet it

fire below the boiler generating the necessary steam had not been burning long enough to give steam of sufficient pressure before the lapse of many valuable minutes. The latest motor-driven engine arrives at the scene of activity in shorter time; when nearing the place the drive is switched off and the pumping outfit connected, so that before the engine itself has come to a complete stop, the pump is in perfect working order and ready to throw a stream of water the instant the pipe connections are made. These minutes often are of the greatest importance and are one of the strongest

arguments in favor of the motor-propelled fire engine of the latest type.

And not only pumping engines, but fire apparatus of all kinds and for all purposes, from the transportation of men to the carrying of ladders, towers and chemical extinguishers, are coming into general favor all over the country. Daily the list of cities and towns which have installed or are on the point of installing the new apparatus is growing; factories specializing in the manufacture of these engines are being built; progressive automobile builders are taking up the manufacture, and everywhere the automobile fire engine is "making good." It is found in the most unexpected places, in towns barely large enough to be on the map, where its territory of usefulness embraces the whole countryside in a radius of thirty miles or more, and in the largest cities where it proves the most effective assistant of the fire fighters in their work.

Slack Joints That Affect Carbureters.

While erratic running at slow speeds usually is attributable to faulty carburation in a new car, the same trouble in an older car may be the result of any one of a number of causes. This trouble may obtain when the car is in motion or when it is standing still with the motor running. If it is found that with the throttle lever in one position the motor will turn over nicely at about 400 revolutions a minute at one time and at another will stop entirely, the trouble may be due to a slackness of the connecting rods and levers between the carburetter and the hand throttle lever. Between these two points on some cars there are as many as six or eight universal joints, and a slight wear at any of these will aggregate to a considerable movement at the throttle itself. Consequently the moving of the hand lever does not insure a corresponding movement at the throttle which may move more or less than the hand lever. The remedy is obvious and consists of taking up the slack in the connections. The same defect is sometimes existent in the ignition control lever, but here it is not so noticeable, although there may be some risk in that the safety point of the advance may be passed and a back fire result.

When Gas Tips May Break Lamp Lenses.

In the majority of acetylene headlights the burner consists of two jets directed toward each other which spread out into a fan-like flame at their point of impingement. A temporary stoppage of one of these jets causes double pressure on the other, and as like as not the resultant elongated flame will reach either to the front glass or to the more expensive lens mirror in the rear. Therefore, when the light appears dimmer than usual an immediate investigation is in order if the expense of a new glass or mirror is to be avoided. The fitting of a different type of burner often will obviate a recurrence of the trouble.

RANGOON OFFERS OPPORTUNITIES

City of Private Vehicles, Reports Consul,
Who Presents Suggestions—Types of
Motor Cars Most Desired.

Speaking of the commercial awakening of Burma and of the gradual introduction of motor cars for business and pleasure use, Consul M. K. Moorhead, of Rangoon, states that during the fiscal year ending March 31, 1910, \$69,583 worth of automobiles and motorcycles were imported into Burma from the various manufacturing countries, \$65,236 of this sum being credited to England and not a single dollar to the United States. As the price of gasoline in Burma is but 14 cents a gallon, automobiles, wherever tried out, find immediate favor.

"The demand for automobiles in Rangoon is increasing," continues the consul, "and there should be splendid opportunities for the introduction of American machines. There is probably no other city in the East in which so large a proportion of the population use some sort of a private conveyance. Clerks in banks, stores and other business establishments, merchants, professional men, civil servants, army officers, well-to-do natives of India and rich Burmese all have their own horses and carriages or automobiles. The reason for this almost universal use of private conveyances is that nearly everybody lives three to ten miles from the business section, and there are no electric cars leading to the outlying residential districts. Public conveyances are so unsatisfactory and expensive that most people find the upkeep of a private turnout or automobile much cheaper. For these reasons the general use of automobiles is bound to increase, especially as the price of horses is going up. A new one horse, two wheeled buggy or dogcart, with small Burma pony, costs \$500 to \$600; a four wheeler and pony cost from \$700 to \$1,200, or about the price of a small automobile, while the upkeep of a horse is probably higher than that of a motor car. It would seem, therefore, that a low priced, serviceable car for city use would find a ready sale here. American manufacturers should submit prices c. i. f. Rangoon. Through freight rates can be obtained from any of the trans-Atlantic steamship companies. The best route is via Liverpool and the Bibby or Henderson Line or via Hamburg and Hansa Line."

Anti-Freezers That Injure Metal.

Speaking of anti-freezing solutions offered to him, a motorist, who is at the same a chemist, calls attention to some of the things that are liable to happen when a radiator is filled with one of these acidulous or alkaline solutions. If the solution is acidulous, a corrosion of the metal of the

pipes is bound to occur; if the solution is alkaline, hydrates of the metals may be formed; in either case, and even if the solution is saline and neutral as far as the litmus test would show, there is still the probability of electrolytic decomposition of the metal. Whether these drawbacks balance the danger of breaking the pipes by freezing water is a question which each motorist may decide for himself. The litmus test consists merely of dipping a small piece of litmus paper—purchasable in almost any drug store—into the solution. If the paper turns red, it denotes the presence of acid; if it turns dark blue, it is evidence that the solution contains an alkali. Wood alcohol, which is in quite general use, is harmless.

Doctor's Death Due to Exhaust Gases.

A somewhat mysterious case of poisoning by exhaust gases in Chicago is causing considerable comment. A physician, Dr. John A. Hemsteger, 56 years old, was the victim. He was cleaning the muffler by pouring a quantity of wood alcohol and kerosene into it. The doors of the garage were closed, and when he started the engine and opened the cut-out the fumes overcame him so rapidly that he was barely able to reach the door and open it. He was taken to his room, where he lapsed into unconsciousness and died the next day. The autopsy revealed that death was due to poisoning by carbon monoxide, causing cerebral hemorrhage. Chicago physicians state that it is the first case of the kind on record.

Why Crank Cases Should Be Washed.

Once in about every thousand miles the crank case of a motor should be thoroughly drained and cleaned out with kerosene and gasoline, and then replenished with oil. Particularly with high-speed engines is this necessary in order to retain a clean and efficient engine. After being churned about in a crank case, the "body" of any oil is gone; it has become thinned and contains more or less carbon and water. Implying economical running by saying that a motor needs but a gallon in a certain distance or other is foolish, for the pouring of fresh oil into the crank case without removing the old oil is but lessening the lubricating efficiency and increasing the carbonization, besides, oil is cheaper than motors.

Right Way to Fasten Battery Wires.

Just as there are two ways of doing almost anything, there are two ways to fasten battery and coil terminal wires. One way is wrong, and the other is to twist the bare end of the wire around the terminal in a clock-wise direction and then tighten up the nut. As the screw threads are right-handed, the tendency of the nut will be to twist the wire around the terminal tighter than it was. When the wire is twisted in the other direction, the nut would tend to untwist it and make a very insecure hold for the wire.

The Fool-Proofing of Commercial Cars

Hitherto the question of fool-proofing automobile mechanisms usually has been considered on the broad basis that it is the part of wisdom to provide the simplest possible operating requirements simply because they will involve the least trouble to the average operator and to safeguard them against abuse as a sort of trouble insurance. When the commercial vehicle is taken into account, however, fool-proofing becomes an insurance investment to the buyer which is measurable in dollars and cents. Furthermore, and what has not been recognized hitherto, the degree of fool-proofing, the amount of mechanical insurance put into the machine, must be balanced against the intelligence of the driver; too many safeguards may hamper the work of the skilled operator just as too few may cause the unskilled endless difficulties.

This point is developed by Arthur J. Slade in a paper entitled "Fool-proofing the Commercial Car Mechanism and Its Control," presented before the Society of Automobile Engineers at its recent annual meeting in New York City. "As there are many widely differing classes of business employing commercial cars, each having its own special conditions of service, necessitating the employment of drivers of varying degrees of skill, so the extent to which fool-proofing should be carried varies proportionately," is the way he expresses the idea.

"The maximum degree of fool-proofing, which can be attained without sacrificing other important features, is, of course, desirable in every instance. There are, however, limits beyond which it is unwise to go, except under special circumstances. There are certain classes of business in which it is necessary to employ drivers entirely unskilled in motor truck operation; their knowledge and experience in other details of their work being of primary importance, and the driving merely incidental. Retail store delivery and collection service might be cited as an illustration. Here the driver's duties call for intimate knowledge of their delivery routes, accuracy in keeping their sheets or books, reliability in making C. O. D. collections, etc. This class of service must be provided with vehicles which the unskilled driver can learn to operate with ease and certainty, and calls for a high degree of fool-proofness, even at the sacrifice of features which, in other classes of service, would appear most important.

"In other lines of business drivers of greater skill and even of some mechanical ability may be employed; their chief if not their only duty being to operate their

vehicles. Such a service is illustrated by a motor bus line. Drivers of these cars may be selected with reference only to their ability as chauffeurs, and the fool-proof characteristics of machines for this service can be practically ignored in favor of features contributing to flexibility, speed and economy of operation and maintenance.

"Between these somewhat extreme cases many other classes of service readily occur to the mind. Without indicating the degree of fool-proofness necessary in any particular case, the suggestion is offered that the successful development of the motor truck industry would be furthered most effectually by our designers producing machines suitable for some definite character of service (taking into consideration not alone carrying capacity, but also the operating conditions under which they will be employed), rather than by endeavoring to develop trucks suitable for universal application. The field is certainly large enough at the present time to justify some degree of specialization, and a tendency in this direction is already noticeable. It should not, however, be inferred from these examples that all light cars must be fool-proof and all heavy vehicles complicated. There are lines of business using light cars where other considerations than fool-proofness are of the first importance, and heavy truck service where the drivers' limitations necessitate the simplest method of control.

"Electric trucks have reached a higher degree of fool-proofness than gasoline trucks, as far as operation is concerned, and these trucks are conceded to be the simplest type of machine to operate. But, on the other hand, care is necessary in keeping the motors, controllers, etc., in good order, and the batteries require expert attention in charging, equalizing, washing, etc., to insure the most satisfactory results. They seem to be especially satisfactory in the case of large installations where the machines are cared for in a private garage under the direction of a competent mechanic or electrician.

"In connection with both electric and gasoline machines the question of overloading is always a serious one, and as yet no automatic means of preventing this has been devised. Some experiments have been made in the direction of producing an indicator to show the approximate load, by measuring the deflection of the springs. At best such a device would merely indicate when a truck was overloaded and to what extent, and could not be utilized to prevent the trucks being abused in this respect.

"Another prolific cause of trouble, especially in gasoline trucks, is overspeeding. The most practical means of obviating this is by the use of a centrifugal governor operated from some rotating part, such as cam or other shaft, which revolves at a speed proportional to the speed of the motor. Such a governor, by being connected to a valve at some point between the carburetter and the intake manifold, can be adjusted so as to give a reasonable regulation of the motor speed, and thereby prevent the racing of the motor and the excessive speeding of the truck. Such governors necessarily introduce additional parts, but in view of the fact that speeding is such a serious detriment, the added complication seems justified in practically every case. The governor adjustment can be sealed to prevent any readjustment being made without the owner's knowledge.

"A simplification in the motor control can be accomplished by the elimination of the spark advance and retard lever, thereby controlling the motor speed by the throttle lever alone. Two well-known makes of magnetos are manufactured to meet this requirement, one having a centrifugal controller which automatically advances or retards the spark by rotating the armature out of its normal position. It seems, however, that this device is not adaptable to all types of motors, but doubtless the manufacturers will perfect the instrument so that it can be used on motors of high or low speed, and also on motors having a wide range of speed. It may prove necessary to design magnetos with special reference to the individual characteristics of the motors to which they are applied. The added complication of the centrifugal device, sliding sleeve, etc., is obviously a disadvantage, and experience must determine whether the manual spark control more than offsets this magneto complication. Another type of magneto operates on a fixed spark principle; the speed of the motor, transmitted to the magneto, varying the intensity of the spark, thereby giving the effect of a spark advance by causing more nearly instantaneous combustion at the higher motor speeds. Some experiments with this type of magneto, however, have indicated that, while apparently well suited to high speed motors, it is not satisfactory when applied to motors having a wide variation in speed.

"Oiling systems are open to improvement in the direction of eliminating the adjustment of sight or other feeds, but it is desirable for the driver to have means of knowing that the motor is always securing

proper lubrication when running, and at the present time the constant level splash system with adjustable sight feeds, maintaining practically uniform oil level in crankcase, seems to involve the minimum of complication. The lubrication of spring shackles, wheel bearings, steering gears, clutches and other parts is obviously of the utmost importance in order to minimize wear, but no device has yet appeared which accomplishes this automatically. Compression grease cups placed at points sufficiently accessible to encourage the operator to use them give the most satisfactory results.

"Clutches have apparently narrowed down to practically two types, the disk and the cone. The disk clutch necessarily has a far greater number of parts, runs entirely encased, and while having the advantage of being easily slipped during acceleration, is not so readily inspected or so conveniently repaired as the cone clutch, which is in all probability the simplest known type and which, being in full view, can be easily understood by the least intelligent driver. Though the comparative merits of disk and cone clutches will doubtless be an open question for some time, it is interesting to note that at least one of the best-known European truck manufacturers has returned to the use of cone clutches after having for a short period used the disk. Several English trucks now on the American market also use cone clutches.

"The type of transmission is also a question open to discussion, and it is not likely that any real standardization will be effected in the near future. The sliding gear is in more general use than any other one type. The selective type with gear shift locking device, and gears of large diameter and wide face, presents no serious difficulties to the average driver, and when suitable materials, properly heat treated, are used in the gears, there is little likelihood of damage due to careless gear shifting. But where it is certain that the drivers will be of a low order of intelligence, other types of transmissions are at least worthy of consideration. The best known of these types is the planetary, which, owing to the principle of its construction, is limited to only two speeds, having an approximate ratio of 3 to 1. This wide variation of speed necessitates the introduction of some means of permitting acceleration. In the case of one make of truck at least, it has been necessary to introduce in addition to the usual planetary transmission clutch a set of friction disks. The contracting bands also require frequent adjustment for wear, and periodical renewals of wearing surfaces. The advantage of doing away with the sliding of gears is, in the minds of many, more than offset by the limitation in number of speeds in the planetary type of transmission. It is a type more especially suited to lightweight vehicles where the question of acceleration is not so serious as in heavy trucks, and in service where the least skilful

drivers are employed, although one well-known truck uses this transmission for loads up to 10 tons. Friction drives, doing away with both clutch and speed gears, doubtless have points of merit, but there is a practical limitation in the amount of power possible to transmit satisfactorily by this system, and it is questionable whether this device can be successfully used in any but the lighter capacity machines.

"Modifications of the sliding gear transmission are used to some extent, the best known being of the jaw clutch type, with gears always in mesh, the speed changing being accomplished by sliding the jaw clutches. These transmissions require just as many gears as the sliding gear type, and necessitate in addition thereto the introduction of the jaws. Running the gears constantly in mesh, whether transmitting power or not, must result in greater wear to the gears than when they are in mesh only when power is transmitted through them, and while this type of transmission may have decided points of merit, it has not, at any rate, become generally accepted as being superior to the sliding gear type. A modification of the jaw clutch type is exemplified in an English built truck now being introduced in this country in which the jaws are brought into engagement automatically by means of springs; but there are mechanical complications in this transmission which it is believed are not entirely justified. Furthermore, the introduction of a rubber jaw coupling is necessary between the speed case and differential, as the various speeds may be changed when the clutch is engaged, and therefore the combination of the speed gears with differential in a single case is prevented. This is an example of a transmission of which the operation is extremely fool-proof, but the construction correspondingly complicated.

"The general character of service for which any particular truck is designed must determine the degree of fool-proofness required, bearing in mind that, as a general proposition, this can only be accomplished by added complications in construction, or by the sacrifice of economy in maintenance and operation."

One Way to Lose Export Trade.

A specific instance may be cited of how one American automobile firm failed to take advantage of an opportunity to introduce their cars into the market, writes Consul Stuart K. Lupton, stationed at Karachi, India, to the Department of State at Washington.

A local Indian firm was contemplating the purchase of 15 or 20 cars to be kept for hire, in addition to the regular business of an agency. The firm was finally persuaded to give an American-made car a trial before definitely placing their order. Accordingly a single car was ordered from an American firm. The car wanted was listed

at \$790; packing and freight to New York, \$47.50, and freight to Karachi brought the total amount to about \$900. Acting on this basis, a draft for \$200 was sent, requesting that the car be forwarded, balance cash against documents at Karachi. This \$200 would have paid packing and freight to Karachi and in case of the documents not being taken up, return freight to the American city, with a balance of about \$30 to \$35, thus obviating any possibility of loss on the part of the shippers. Subsequently the following telegram was received from the American company:

Request you to authorize New York agent accept draft drawn at sight limit \$567.60 documents to be attached. Freight must be prepaid.

As the result of this telegram the would-be purchaser is disgusted and will probably place his order with English makers who are accustomed to send cars to Karachi cash against documents in this city without a deposit; until American makers change their ideas they will sell nothing here, adds Consul Lupton.

Brazil as a Market for American Tires.

"If there are any lines in which trade could be extended in Brazil by the simple expedient of greater and better directed effort, they are the various manufactures of rubber," says Vice-Consul J. J. Slechts, Rio de Janeiro, in a report to Washington. "The United States enjoys the considerable advantage of a 20 per cent. preferential in customs duties on all goods for this description; yet, notwithstanding this, American manufacturers sell less than 15 per cent. of the total imports of such wares into Brazil. These imports aggregated about \$533,000 in 1909, of which the United States supplied only \$77,000 worth, while selling much larger amounts to other countries where no tariff preference existed.

"The reason for this poor showing is not far to seek. One needs but to spend a half hour in a visit to the shops where, for instance, automobile supplies are displayed to understand why so few American goods are sold. It is impossible to buy American-made tires in Rio de Janeiro, because none are offered for sale, unless it be an occasional set re-exported from France or England. Automobile accessories imported into Brazil now amount to \$150,000 annually, and the United States furnishes about \$12,000 worth of these. They are sold here by European houses almost exclusively, generally by the agents of various European automobiles. The fact that motors used are principally European is also a disadvantage to American tire manufacturers, but one which could be easily overcome if Americans would place themselves in a position to properly compete. The only effective way to overcome the present disadvantageous position of the United States is by securing direct representation in Brazilian cities."

The Problem of Suspension; Underhung vs. Overhung Frames

Efficient spring and frame suspension forms one of the chief objects of modern design, and while the majority of modern designers cling to overhung suspension, as differentiating from the design in which the frames are hung below the axles and which is known as underhung suspension, at least one car of the latter type has been on the market for some time, and the recent addition of several others in which this style of suspension is used seems to indicate increasing attention to the subject.

The first automobiles were, quite naturally, extremely crude affairs which lum-

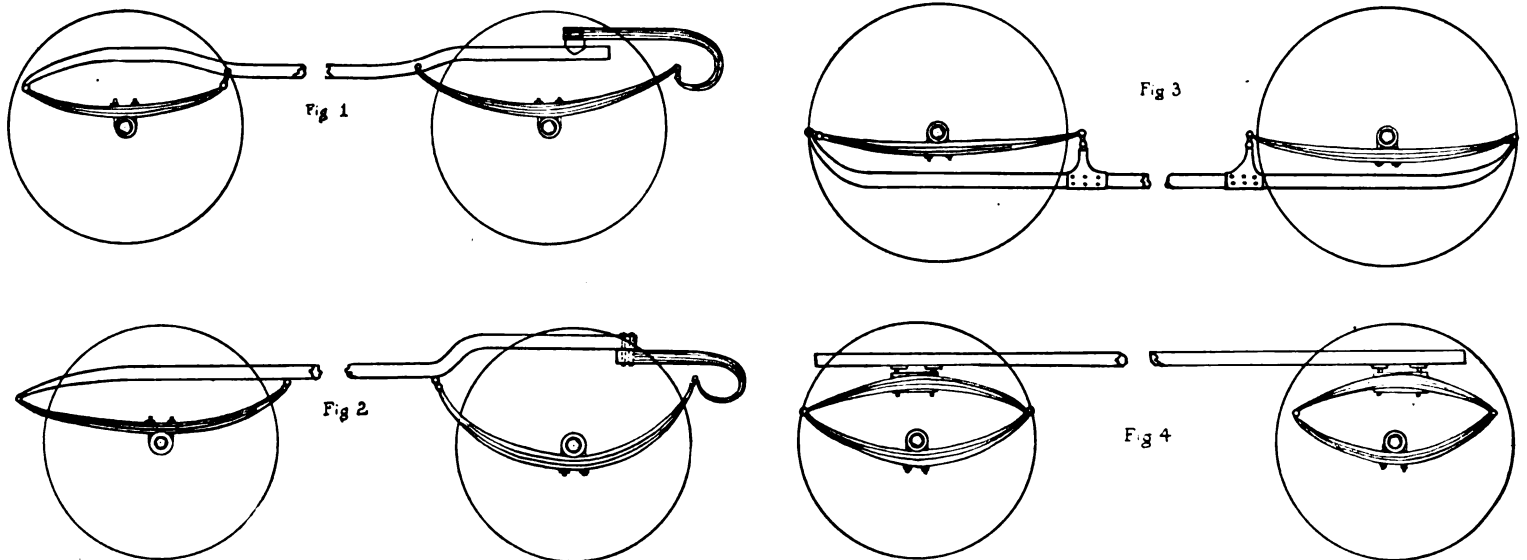
obiated to a certain extent by a better proportioning of weights and the use of frames with a drop in the center. Full elliptic springs followed, and though these had a tendency to still further raise the center of gravity and increase side sway, these faults were taken care of, in a way, by a return to smaller wheels and the use of shock absorbers and similar devices. Dropped frames also made possible the use of a straighter drive line than was possible at first.

Further improvements gradually were made and a number of new systems of suspension were evolved, each of which over-

sacrifice of resiliency or the use of good-sized wheels.

A somewhat similar system of hanging the springs below the axles is shown in Fig. 4, and represents a typical American design. Here the frame is carried on full-elliptic springs front and rear, the center of gravity being kept down by attaching the lower halves of the springs to the under sides of the axles.

Underhanging is accomplished in two instances of the three, which are now on the market, by using a frame with a rise at each end and suspending it below the axles



CONTRASTING TYPES OF FRAME SUSPENSION

bered slowly along the roads, and if they reached their destinations—which occasionally they did—left their passengers torn with conflicting emotions; astonishment at their safe arrival contrasted with wonder at the exquisite torture which these new conveyances could inflict upon those who gathered the courage to ride in them. But as improvements were made and greater speed became possible, new difficulties cropped up, forcing designers to give more attention to the stability of their creations and to provisions for the comfort of passengers. Springs were more properly proportioned, the size of the wheels was somewhat reduced, and centers of gravity lowered, the result being a semblance of the finished product as turned out today.

The use of semi-elliptic springs succeeded the use of no springs at all, and while this made the cars easier riding, it had the disadvantage of raising the chassis too high from the ground for safety, unless unduly small wheels were used. This fault was

came in its own way many of the faults prevalent in earlier design. The most popular system now in vogue is a combination of the two first-mentioned systems, and is embodied in those cars in which the frames are carried above the axles on semi-elliptic springs in front and three-quarter elliptic springs in the rear, as illustrated in Fig. 1. With this design a good degree of resiliency is obtained; sidesway is reduced; the center of gravity of the car is kept down low enough to overcome much of the tendency to overturn on curves or on a bit of sloping roadway, and the dropped frame permits of an almost straight-line drive. This system is further modified on the cars recently put out by a firm of prominent foreign manufacturers, and is shown somewhat exaggerated in Fig. 2. Here the front of the frame is suspended in the usual way by means of semi-elliptic springs but the lower section of the rear three-quarter elliptic springs are attached below the axles, making possible a lower chassis without the

by means of semi-elliptic springs both front and rear, as shown in Fig. 3. In the third instance semi-elliptic springs are used in front, and a single spring of the same kind placed across the chassis suspends the frame in the rear. Probably the greatest arguments which can be advanced in favor of the underhung suspension, aside from the attractive appearance it presents, are the low center of gravity and large wheels which are made possible. The consensus of opinion is that large wheels, up to a certain limit, make for easy riding and economy, but, on the other hand, it has been claimed that the larger wheels are more likely to collapse on curves than are the smaller ones.

One theory advanced by the adverse critics of the underhung suspension is that in case a spring should break, the frame would sag sufficiently to strike the ground, and that if two should break, the chassis would drop to the road. There is no accurate data to prove or disprove this latter theory or the

other one, such an accident never having been recorded, but it would seem that in the event of a spring breaking, the stiffness of the frame would prevent a drop of more than an inch or so. The degree of perfection to which springs have been brought within the last few years, however, has made breakage a comparatively rare occurrence, and danger from the latter source is practically negligible. Underhanging also eliminates to a great extent the tendency to sidesway by reason of the fact that the bulk of the weight of the car comes almost in the same plane as the springs, which can have no appreciable lateral movement.

Aside from the mechanical features involved in underhung and overhung cars, opinion is fairly evenly divided as to their relative appearance on the road, and while there always will be a host of admirers of the conservative, as embodied in the more general type of overhung cars, the adoption of the underhung system by four prominent manufacturers goes to show that it must be reckoned with.

Georgians Learning Their Own Law.

Down in Georgia the motorist is better off than in New York, as far as his license is concerned, for there a license once issued is good for all eternity, that is, the license is good as long as the car lasts, or is sold, busted, burned or otherwise put out of commission. Very few people even in the state of Georgia itself were aware of the fact, and as a result, they have been bothering Phil. Cook, the secretary of state, to such an extent that he has issued an announcement calling attention to this feature of the Georgia automobile law.

"Nearly every automobile owner is making the mistake of registering, or trying to register, his car for 1911, after having run it during the past year or even longer," says Mr. Cook. "The fact is that when an owner registers his automobile under the Georgia law, it is registered permanently until the car itself changes hands. Then the new owner must take out a license and get another number. The old number is dead, as the law stands now, but I think the law will be amended in this respect when the legislature meets. It will not be amended in regard to the first part, however.

"The amendment will probably require something that it does not require now—that when a car changes hands, the first owner must report that fact, with the name and address of the purchaser, to this office, so his old number can be canceled. Otherwise, there's going to be confusion. Not long ago a car ran over somebody, down in South Georgia, and the authorities asked this office who owned the number. We gave them the man's name, but it turned out he'd sold the car, and the purchaser had sold it to still another man. It was the third man they wanted, but they got after

the other two before they caught the right one.

"The laws in some other states, particularly New York and Massachusetts, impose a license tax which must be paid yearly, and which combines the ad valorem tax. But in Georgia the ad valorem tax must be paid yearly, and the license fee is permanent."

The Chauffeur and His Carburetter.

Guy Hutchinson, secretary of the Corbin Motor Vehicle Corporation, is credited with unfolding the following good story during the New York show:

"The late Mark Twain used to tell in his droll way about a physician friend who used to take Twain riding in his Corbin car. At first the doctor drove and cared for his car himself, but his practice soon grew so large that he decided to engage a chauffeur, and advertised for one.

"The first applicant, Twain used to declare, weighed about 190 pounds and was about seven feet tall, and looked big enough to pick up a car and carry it. Inasmuch as the physician admired well-built, finely-developed men, he was interested in the applicant, but doubted the latter's experience and technical knowledge.

"Have you had any shop experience? Do you know how to care for a motor, grind valves, clean out cylinders, and so on?" the doctor wanted to know. "Do you know how to change tires and make adjustments? Can you time a motor?" To all of which the applicant kept replying, 'Sure.'

"Still the Corbin owner was not convinced.

"You are such a fine specimen of manhood I should like to engage you," he said, "but now in cases of trouble, overheating or loss of power, for instance, what would you do if you found your carburetter was to blame?"

"Well, yer see, doctor," replied the would-be chauffeur, "to tell yer the truth, I don't never have no trouble with it. I ain't been sick two days in the last three year."

The Degree of the Chauffeur's Guilt.

The question of whether a chauffeur who carelessly runs over and kills a person in the street is guilty of manslaughter in the first or the second degree has caused a difference of opinion among the members of the Appellate Division of the New York Supreme Court, Justice McLaughlin dissenting from the view held by his associates. William Darragh, the chauffeur whose case was before the Supreme Court, last March ran over and killed 13-year-old Ingewaard Trimble, escaped to Texas, was arrested later, convicted of manslaughter in the first degree and sentenced to imprisonment of not less than seven nor more than twenty years. His case was carried higher, but the severe sentence has been affirmed by the Appellate Division. Justice Clarke, who presided and who wrote the prevailing opinion, said that the jury would have been

justified in finding that Darragh was running his machine at 35 or 40 miles an hour when he struck the boy, and was entitled to reject his story of the accident. In dissenting, Justice McLaughlin said the jury might well have found Darragh guilty of manslaughter in the second degree. The fact that the decision was not unanimous gives Darragh a chance to take his case to the United States Court of Appeals.

Who Pays For Delivery of License Tags?

The automobile owners of Hagerstown, Md., are at loggerheads with the state department over the question of who is to pay for the delivery of the license tags. It seems that the state department sent the tags to the licensees, charges collect, and the licensees very promptly objected to the extra payment and refused to accept them. While the matter of prepaying express charges is pending, the affected motorists are operating their cars without tags, thereby again coming in conflict with the police authorities of the various municipalities. The members of the Hagerstown Automobile Club have taken the matter up and will make a test case by provoking an arrest.

Philadelphia Race Nets \$6,609 for Charity.

As the result of the Fairmount Park races held last October, the sum of \$6,609, being the profits from the sale of grandstand seats and parking space, has been turned over to Mayor Reyburn, of Philadelphia, to be distributed by him to the five charitable institutions which were to have been the beneficiaries of the race. The mayor, however, is not wholly happy, and has stated that if another race is to be run, the charities must receive the entire net profits, despite the Quaker City Automobile Club's contention that as the promoter of the race, and for the risk of guaranteeing the prizes, it is entitled to the profits of minor concessions such as the sale of programs, etc.

To Protect New Jersey Garage Keepers.

A bill has been introduced in the legislature of New Jersey making it a misdemeanor for an automobile owner to obtain storage, repairs or supplies for an automobile at a garage without paying therefor with intent to defraud the proprietor or manager thereof; or who, after obtaining credit or supplies surreptitiously removes his automobile without paying the charges. Somewhat similar measures are in effect in New York and other states.

Lamps For All Vehicles in Washington

Despite the most vigorous opposition by people who are unable to realize the benefit rendered themselves by a general lamp law, the Washington, D. C., "lights on all vehicles" ordinance went into effect on January 1: it already has been of considerable salutary effect.

Dealer's Ideas of "Taking Care" of Customers

Editor of the Motor World:

In an article headed "Practices Which Offend Patrons" in the Motor World of December 15, the views of several individuals are set forth as to why such things occur, and having had some experience along the same lines, I would like to set forth a few theories of my own.

The agent's unpleasant experience with the man who gave his order for a \$4,000 car, and at settlement time came up against the agent's "extra" for finish in a different color shows that there was a misunderstanding, and in this instance the agent should, of course, have accepted the check for \$4,000 and said no more about it, as it was evident he had failed to tell the purchaser that a finish in a different color was charged for, as is the case with most companies. However, as the agent failed to make this known at the time of taking the order, he should have overlooked the matter, and thereby saved the deal.

As to the purchaser who had to pay \$5 for the monogram he wished put on the tonneau door, this shows that the salesman was not doing his work "open and above board," and took an unfair method to save the \$5 and also lost his customer.

The complaint from the owner who thought that his agent failed to fulfill his promise in "taking care" of his machines after sales were made and the car in the customer's hands, is the part of the article which interests me most.

In that little phrase, "taking care of you," is a chance for many varied meanings. It is true that some agents, and possibly a large per cent. of them, abuse it both in its use and fulfillment. As the Motor World's article stated, the phrase naturally appeals to a man when the agent is making his sale. However, the interpretation the latter puts on it and the one the buyer puts on it may differ widely. For instance, suppose the buyer hearing the remark, "We will take care of you," draws the conclusion that all manner of troubles he may have will be taken care of without charge. The agent in making the statement may refer to either defects in the car or to his fund of general information and probably some repair work thrown in, or possibly to all three, while another agent might intend the "taking care" to cover the car's regular guarantee only.

Thus the phrase leaves too large a field for the imagination to work on, and a great deal of hard feeling would be saved if the salesman would see the advantage of explaining to his customer just what he meant by "taking care of the car." If he

does not do so, the customer may buy the car with the general understanding that he will be taken care of to a great extent, and will forthwith proceed to ram the car through all sorts of stunts and abuses, easing his mind with the fact that the salesman told him he would be taken care of, which the customer had concluded, included any old thing. Naturally something will happen. The owner returns to his dealer taking it for granted his car will be put in shape free of charge. The dealer upon examination of the car finds that the trouble was caused by neglect or abuse, and makes his charge for repairing according to the necessary time and material taken to repair the damage. Act II—The customer, on being notified that his car is ready, comes to take it away, and is presented with a bill for time and material. All of his air castles collapse, and he is confronted with the proposition of digging up cold cash to pay the debt which he thought was included in the salesman's statement about taking care of the car. Of course, the customer pays the bill, probably not without a vigorous protest, and leaves the place vowing vengeance and right away goes and tells his friends his troubles. The question is, "Who is to blame?"

In this case it would seem that to a certain extent both sides were to blame, yet it all happened through a misunderstanding on both sides. The average salesman in closing a deal is too apt to enlarge on this "guarantee," and promise things that he knows he or his manager cannot fulfill. He is figuring on the present and not on the future, which is one thing he should guard against at all times. He should never promise more than he can do. If anything, it is best to promise less. If a customer is promised a certain thing and does not get it, he is sore. If he is not promised a thing and does get it, he is pleased.

Is it not a great deal better to have a customer bring in some little repair and after it is fixed up and he is pleased, to meet him with the statement that no charge will be made, when he had been expecting to pay for it? On the other hand, let a customer get an idea that he will not have to pay for a thing, and then charge for it, and trouble follows. It would be a great deal better for all parties concerned if a fair and reasonable "guarantee" were decided on at the time of the sale. Of course, as far as the factory's guarantee goes, it practically covers nothing outside of poor workmanship or defective material, as they naturally expect their agent to look after the operation of the car, coming to

the rescue only at a crisis. Therefore, the agent has a hard proposition on his hands. He must satisfy both the factory and his customer, and lastly himself—although this "lastly" might be made read "firstly" in some cases.

It is beyond reason to expect to satisfy all of one's customers. No one ever satisfied everybody. It is the agent who can satisfy the greatest number that wins. This, of course, is hard to do, and a dealer may find his business slowly dropping off and wonder why, when careful investigation will prove that his sales force has promised many things that he could not expect to do, and thus unintentionally he has caused hard feelings.

In an editorial in the Motor World of December 15, you also deal with "Salesmanship vs. Order Taking," making the statement that a great many salesmen owe their success to the ease with which orders have been taken because of keen demand, and not to any great amount of work on their part. This, to a certain extent, is true, and among this same class will be found the "promisers" who will slyly promise anything in order to close a deal and add another feather to their caps. It is best for the agent to draw close lines in this respect. Don't promise much, certainly not more than you can do without financial loss.

Suppose the customer takes the car from a dealer with the delusion that his being taken care of includes free repair work for a considerable length of time. After a while he is presented with a bill for work done, the damage being his own fault. What happens? If the dealer charges him and insists on his paying, he will go away mad. If the dealer does not charge him, he will come again expecting the same thing.

Thus it gives a chance for so many misunderstandings and so much hard feeling that a definite understanding is about the only safe plan. Maybe the dealer will not make so many sales, but he will have more customers in the end.

One dealer, in order to avoid confusion as to what shall and shall not be done, and who, by the way, sells a car of very low price, gives each customer a due bill for \$35, entitling him to either that much work or material, and it is understood that after that amount is used up the customer pays for whatever he requires.

Of course, any dealer who expects to be fair will stand by the car in regard to defective parts and in imparting any information the customer may need. In some cases, where defective parts are concerned, it is hard to decide whether the fault lies in the

part or the user. In any event it is best to give the customer the benefit of the doubt, and most factories are willing to do so. However, it sometimes happens that the customer objects to paying charges to and from the factory on defective parts, and in connection with this it would be a very good plan for factories to pay the charges one way on all defective parts. They are usually to blame in these cases, and it is not exactly fair to ask the owner to stand charges both ways on something over which he had no control.

It is a hard proposition to expect every new owner to give his car the best of care, and the more neglectful he is in this respect the more trouble he has, and the harder he is to satisfy. It is the devil-may-care driver who has the most trouble, and he is generally the one who howls loudest when he has to pay for his recklessness. Therefore, it is evident that there is more than one side to this "care" proposition. The best thing for the dealer to do is to make promises he knows he can fill and stick to them, even at a loss, but if it is a case of paying for wild driving and abuse, the owner should take his medicine and not kick. The only thing that might be added is, that the dealer has to make this "care" and "guarantee" good himself most of the time, and its scope, of course, is to a great extent governed by the price of the car. To be perfectly fair is all that either the owner or the dealer can do, and if they can't agree on that basis, the sooner the relationship is severed the better. For the owner who is trying to beat the dealer will come to grief at his next stop, and the dealer who won't play fair don't last long in any business.

J. G. B.

Judging Lubrication by Exhaust Smoke.

Relying upon smoke issuing from the exhaust pipe of a car is a popular means of testing whether or not the cylinder lubrication is thorough or too thorough. However, it is by no means conclusive. The mere fact that the exhaust is smoky does not indicate that lubrication is complete, or rather excessive in all cylinders. If it issues in a steady and continuous stream probably there is sufficient oil in the motor, but if it comes in intermittent puffs, it may be taken that but one compartment of the crankcase is flooded.

Axle Trouble May Affect Steering.

The difficulty in steering a car may be due to a bent front axle, a wobbly wheel in the rear, or a noise may indicate that the rear axle is bent. Collisions, rough road traveling or skidding may cause axles to bend, and, although they may easily be straightened, the best remedy is the replacement of the bent one by a new one. The old one, even if straightened as well as possible, may be so weakened that it will break at a critical moment.

THE MOTOR WORLD

EVERY LITTLE MOTION'S BIG TOTAL

Strikingly Illustrated by Calculations of Recent Remarkable Non-Stop Run—
Work Parts Must Perform.

The average motorist driving his car for say a couple of thousand miles during the summer season, rarely thinks of the immense amount of work some of the parts of the mechanism have to perform in order to accomplish this mileage. He seldom considers the number of times each wheel has to turn, or each piston has to make one complete up and down movement; he does not take into account the millions of times

These big figures serve best to show how mechanically perfect the mechanism of the modern automobile must be in order to be capable of standing such a strain.

Moving Picture Shows That Really Move.

Not only because they are on the same order as those seen in most of the up-to-date "nickelodeons" and other moving picture houses, but because they are produced by apparatus mounted upon a regular three-ton truck, are the shows given by Albert Taylor, of Mount Sterling, Ohio, moving picture shows in more than one sense. Taylor has rigged up a moving picture machine on a truck and in this way moves the source of entertainment around the country, giving shows in small towns



THE 10,872-MILES NON-STOP FLANDERS 20 CAR

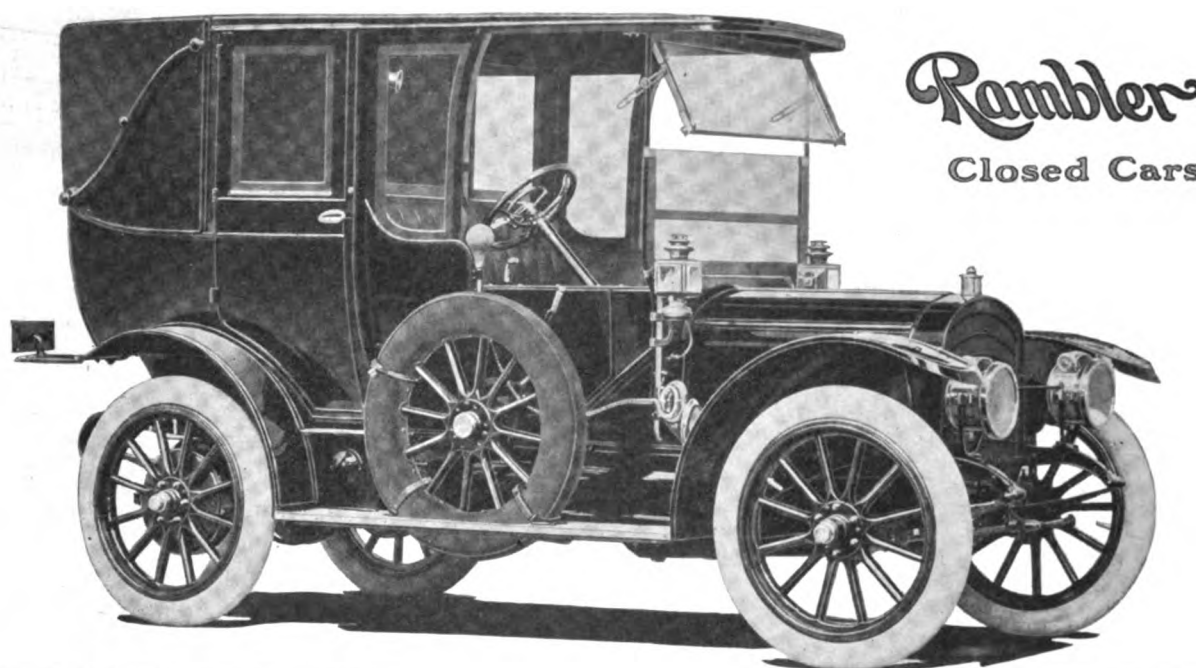
the magneto contact is closed and opened to produce the necessary spark; all he thinks of is the amount of gasoline and oil used, the number of tire shoes blown out and the mileage figures recorded on his odometer.

To what an enormous total these little movements attain is vividly illustrated by a computation of the work accomplished by the various moving parts of the Flanders "20" car on its recent record-breaking, non-stop run of 10,872½ miles, a run which even then was stopped only by an accident caused by running into an unlighted excavation at Los Angeles, the place of the record performance. During this remarkable test each wheel, for instance, turned about 6,135,000 times; the Splitdorf magneto gave 47,997,320 separate sparks; each valve opened and closed 11,999,330 times, and the crankshaft turned 23,998,660 times.

which are not large enough to support a permanent show. A tent is carried and the motive power to furnish current for the picture machine is taken from the motor by a dynamo connected directly to it.

Arrested for "Robbing" a Sunset.

J. H. Graham, of the firm of Graham & Gandy, San Francisco agents for the Sunset automobile, has been arrested on a charge of larceny and released on \$500 cash bail, after pleading not guilty. He is alleged to have taken batteries and gasoline from an automobile belonging to District Attorney Free, which was undergoing repairs in a local paint shop. Graham explained that, being in a Sunset shop, and needing batteries, he appropriated the accessories under the impression that anything found in a Sunset shop could be taken without question by a Sunset agent.



Rambler
Sixty-three
Town Car

WITH a closed car the charm of motoring may be enjoyed throughout the winter. Daily rides may be taken in comfort, regardless of the weather. Necessary errands become a pleasure. With storm curtains between the glass front and cab seats, protection is afforded all passengers. On pleasant days the top may be folded back. The Spare Wheel eliminates worry about tire trouble. It can be so easily and quickly changed, regardless of snow, water or ice. The thirty-six-inch wheels with $4\frac{1}{2}$ -inch tires; seven-eighths rear springs, with shock absorbers, produce gratifying comfort. The trimming is leather inside and out. Seating capacity seven. Flexibility provided by the offset crank shaft and straight-line drive, that permits operation in high gear no faster than a man usually walks, particularly adapts this car to town use.

Rambler closed cars are made in landaulet, limousine, town car and coupe styles. You may inspect them at Rambler branches and dealers stores in principal cities.

The Thomas B. Jeffery Company

Main Office and Factory, Kenosha, Wisconsin
Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco

New York Dealers: The Rambler Automobile Co.
of New York, 38-40 West 62nd Street, New York

Economy

is instituted in the upkeep of your car by the use of

G & J TIRES

which assure at all times

Quality

In their construction nothing but the very best material is used, none but the most approved and up-to-date methods are employed. No tire is allowed to leave the factory until it has undergone a series of most rigid inspections.

Service

Compare the service given by G & J TIRES with the tires you are using at the present time. Ask anyone who has used our tires during the past year what results he has obtained from them and his testimony will be convincing.

Satisfaction

As evidenced by the following extracts from a few of our users:

"The G & J TIRE has been the most satisfactory we have used."

"The one with 11,000 miles to its credit has been used unceasingly for 23 months."

"My experience with the G & J TIRE has been altogether satisfactory."

"I have used my set of tires over 7,000 miles."

"Are the best I have ever used."

G & J TIRE Co. Indianapolis, Indiana

Branches and Agencies Everywhere

RECENT PATENTS.

974,745. Motor Vehicle. Charles A. Carlson, Brooklyn, N. Y., assignor to Carlson Motor & Truck Company, Philadelphia, Pa., a Corporation of New York. Filed May 25, 1909. Serial No. 498,281.

1. In a motor vehicle, the combination with a main frame and rear driving wheels and front steering wheels carried thereby, of a supplemental frame arranged in longitudinal sliding relation with the said main frame, whereby it may be longitudinally removed from the front of the vehicle, a motor and correlated parts carried by the said supplemental frame, manually operated steering member also carried by the said supplemental frame, longitudinally disposed sliding clutch members for connecting the motor and the driving wheels in driving relation, one of the said members being carried by the main frame, and the other by the said supplemental frame, and longitudinally disposed sliding clutch members for connecting the manual steering member in operative steering relation with the steering wheels, one of the said members being carried by the main frame, and the other by the supplemental frame, the said

clutch members being operatively engaged and disengaged by the mere act of sliding the supplemental frame into and out of its operative position in the main frame.

974,746. Motor Vehicle. Charles A. Carlson, Brooklyn, N. Y., assignor to Carlson Motor & Truck Company, Philadelphia, Pa., a Corporation of New York. Filed Feb. 2, 1910. Serial No. 541,413.

1. In a motor vehicle, the combination with a main frame, and a supplemental frame in longitudinal sliding relation therewith, of a pedal pivoted upon the main frame to move longitudinally with respect thereto and having a part overhanging portions carried by the supplemental frame, and means permitting the pedal to be moved laterally out of the path of the parts carried by the supplemental frame while the same is being removed.

974,770. Removable Rim for Vehicle Wheels. Arthur Needham Hood, Boston, Mass., assignor to Hood Rubber Company, Boston, Mass., a Corporation. Filed May 25, 1907. Serial No. 375,738.

In a vehicle wheel, a permanent rim having an inclined face and transverse grooves

in its face, a tire carrying rim removably carried thereby and having lugs engaging said grooves, said permanent rim having also bayonet slots or grooves, a filling ring having lugs for engaging said bayonet grooves, and means for locking said filling ring against circumferential movement on the permanent rim, substantially as described.

975,392. Running Gear for Vehicles. Herbert E. Bradley, Kalispell, Mont. Filed Oct. 25, 1909. Serial No. 524,506.

1. A wheel and main axle therefor and means connecting the hub of said wheel with said axle, said means including a cable extending in a plane parallel substantially with the plane of said wheel and arranged to exert a downward pressure on said wheel, said cable sliding lengthwise and accommodating itself to the position of the wheel, and yielding means supported by said axle and attached to the ends of said cable.

975,393. Controlling Mechanism for Change Speed and Reversing Gearing. Alanson P. Brush, Detroit, Mich. Filed July 3, 1907. Serial No. 381,968.

1. In mechanism for operating change

F & S ANNULAR BALL BEARINGS

(Made in Germany)

The Dependable Kind—

J. S. BRETZ COMPANY

Sole Importers

MOTOR HALL, 250 West 54th St., NEW YORK



**No More Cracked Reflectors
An Insurance Against Broken Lenses**

**THE BRAY
"RONI" BURNER**

**THE ONE
HOLE BURNER**

The Bray "Roni" cannot get out of alignment and break the expensive reflector.

It Will Not Stop Up, Nor Will You Ever Have to Clean It With a Needle

When this burner needs attention you clean it with an old tooth-brush or the tip of your finger. Once cleaned, it is again as good as new.

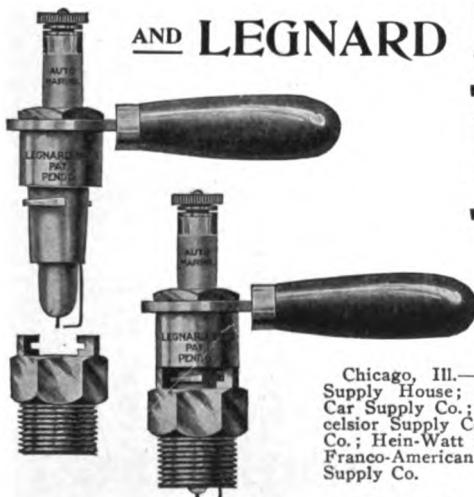
The "Roni" Will Outlast Your Lamp

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WILLIAM M. CRANE COMPANY, 16-18-20 West 32d Street, NEW YORK



Auto-Marine AND LEGNARD Spark Plugs



\$1.50 Each

DEALERS—The following Jobbers carry this line in stock. Order TO-DAY.

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LEGNARD BROS., Inc., 20 Genesee St., Waukegan, Ill.

New York City—F. A. Baker & Co.; Motor Car Equipment Co.; Universal A. & M. B. Supply Co.; Jas. L. Gibney & Bro.; Mutual Auto Accessories Co.; Chas. E. Miller.

Philadelphia—Jas. L. Gibney & Bro.; Auto Brokerage Co.

Boston—Stuart-Howland Co.; The Angier Co. Washington, D. C.—Rudolph & West.

Omaha, Neb.—Nebraska Buick Co.; Powell Supply Co.; Maxwell-Briscoe Omaha Co.; Baum Iron Co.

Lincoln, Neb.—Nebraska Buick Co.

St. Louis, Mo.—Behen-Faught M. C. Equipt. Co.; Phoenix Auto Supply Co.; Enterprise Auto Parts Co.

Kansas City, Mo.—Kansas City Auto Supply Co.

Pittsburg, Pa.—Kaufmann Bros.

Minneapolis, Minn.—Tri-State Supply Co.; United Motor Supply Co.

Detroit, Mich.—Detroit Motor Car Supply Co.

Baltimore, Md.—Coggins & Owens; Loane-Hiltz Eng. Co.

Norfolk, Va.—William H. Grover.

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Tampa, Fla.—Joe B. Johnson.

Louisville, Ky.—Prince Wells & Co.

Topeka, Kan.—Jas. M. Padgett.

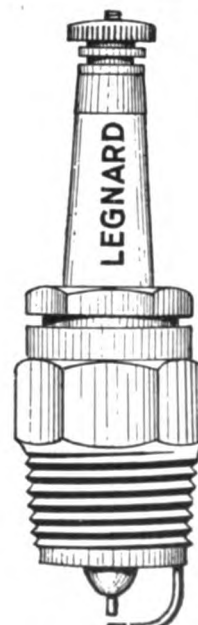
Salina, Kan.—Lee Hardware Co.

Denver, Col.—Denver Auto Goods Co.; E. R. Combe.

Oklahoma City, Okla.—Oklahoma Motor Equip. Co.

Portland, Ore.—Manufacturers Sales Co.

Oakland, Cal.—E. L. Day & Co.



\$1.00 Each

speed and reversing gearing, the combination of two operating members mounted to rock upon the same axis and having notches in their outer ends, a notched locking bar which normally lies within both of said notches and is movable in a direction parallel with the axis of said members, an operating arm pivoted on the same axis as said operating members and having a head which projects into the notch in the locking bar and into the notches in both of said operating members, means for rocking said operating arm and for moving out of engagement with one of said operating members will be engaging the locking bar move it and thereby disengage it from the other of said operating members.

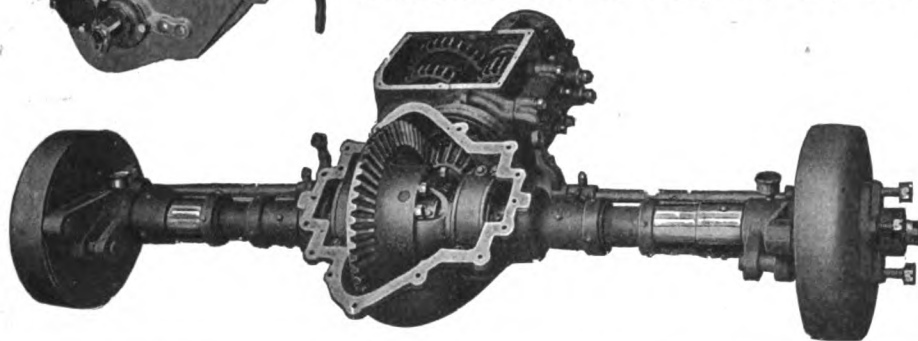
975,401. Magneto Electric Machine. Sherman B. Daugherty and Solomon F. Johnson, Indianapolis, Ind. Filed March 21, 1910. Serial No. 550,668.

1. A frame for a machine of the kind described, comprising oppositely disposed longitudinal portions joined together at one end by a ring portion and at the other end by a transverse plate which carries a bearing, a rear-end portion which carries a bearing and is connected removably to the said ring portion, and there being a rib portion intermediate the ends of the frame and extending transversely from each side of the longitudinal portions, substantially as described.

QUALITY UNIT POWER PLANTS MOTORS

Transmissions Differentials
Steering Gears

"TRUCK PARTS" CONTROL LEVERS
WARNER MFG. CO., Toledo, Ohio



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HARTFORD SUSPENSION COMPANY, 164 Bay St., Jersey City, N. J.
EDW. V. HARTFORD, Pres.,
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USERS OF INVADER OIL

THE OIL THAT GRAPHITIZES
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You Name the Car
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The *Locomobile* Company
BRIDGEPORT, CONN.

The MOTT WHEEL WORKS

Utica, N. Y.

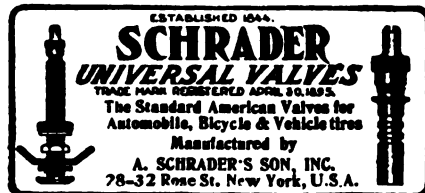
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R. B. ABBOTT SALES CO., Sales Agents
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Aluminum Bodies THE SPRINGFIELD TOP

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SPRINGFIELD METAL BODY COMPANY
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When an automobile starts out to make any sort
of record—speed, endurance, distance—it invariably
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WARNER AUTO-METER

Where accuracy and dependability mean something,
this is the one speed indicator they all use.
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Less Fuel—More Power

Let us tell you all about it.

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Only Good Ones

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The one new car of the year
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Howard E. Coffin's Masterpiece
THE HUDSON "33"

Repair tire and casing cuts with the
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DURABLE—ECONOMICAL—EFFICIENT

Price with Repair Ma-
terial and Garage Kit, **\$15.00**

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The Packers MOTOR TRUCK

The most successful and economical
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3 sizes—1-ton, 2-ton and 3-ton

We want a few more live dealers. Write for territory
THE PACKERS MOTOR TRUCK CO., Pittsburgh, Pa.

MOTOR CAR SPECIALTIES



Our 1911 Jobbing Catalog

should be in the hands
of every live dealer—we
keep you posted on all
the new and practical
necessities for motoring.

Hartford, Conn. Ask for Price List No. 61a



KOEHLER "40"

\$1650

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SAVE YOUR TIRES



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Air Pump

SAFETY TIRE GAUGE

PRICE \$1.50 ALL DEALERS or by mail on re-
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THE ACME MOTOR CAR CO.
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15 cents per line of seven words, cash with order.
In capitals, 25 cents per line.

FOR SALE—Two gentlemen's broad-
cloth overcoats, lined throughout with
Canadian mink; beautiful Persian lamb col-
lars; sizes 38-40 and 42-44. Look exactly
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some lady's long fur coat, satin lined, size
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WANTED—An experienced salesman
acquainted with automobile trade to
handle a new carburetter, proved as effi-
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Liberal arrangements will be made with a
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Must be experienced on high grade work.
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ASSEMBLERS WANTED—Several first
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WANTED—Automobile agency for Aus-
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Address D. L., care of Motor World, box
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Simple, effective, correctly designed mahogany
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dash of any standard automobile—can be attached
easily and quickly. We make the London Top.
Write for details and prices.

LONDON AUTO SUPPLY CO.,
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Dealers all over the country will testify to the fact that this \$900 "Henry 25" is the most remarkable moderate priced car on the market. They will testify that it is the only dependable car of its class ever built. A car that you can sell with a clear conscience. A car that will more than make good any claim you make for it, for it is a car of strength as well as power. And it's more value than the public are accustomed to seeing for the price.

Get this fact firmly fixed in your mind. It is not a toy car. It is not a dinky looking little car. Do not compare it for a minute with any other of those small \$900 cars that you see slowly creeping around your town any day. It is a car of speed and class plus size. It is a

good big roomy car—lots of room—lots and lots of strength. A car that any man is proud to own no matter what his means. It is a car that will work every day for a full 24 hours month in and month out, and you'll never have a delay or set back reported. It is a car you can depend upon and bank on.



Henry Roadster \$900.

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Any Dealer Can Sell
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THE HENRY ROADSTER

has a 4 cylinder 25 horsepower motor of the long stroke type. This in itself is a feature no other moderate priced car can offer, and it is conceded by authorities that for constant, hard, daily work the long stroke motor is beyond question the most efficient.

Carries a 3 speed transmission selective type. Multiple disc clutch. The imported U. & H. high tension magneto. 106-in. wheel base. Hyatt roller bearings. 32 x 3½-in. wheels, Q. D. rims. 25 gallon gasoline tank. Body, red; running gear, blue gray (other colors on special order). Front axle, I-beam, shaft drive. Hyatt Roller bearing on rear axle.

The Henry "25" is the best buy for the money that can be had today. And so with the entire line of "Henrys." Each one shows new thoughts—new conceptions of what really blue ribbon cars should be.

HENRY "40" Touring Car, \$1750

The large car of the day. For the trade that wants a large touring car you cannot offer a more magnificent and powerful machine than the "Henry" 40. Besides its beautiful and graceful lines its chassis is the strongest made. The entire construction is ample and liberal. And it is such a distinctive car. Not one of those ordinary cars that you see crowd the streets of any American city any day in the week, but a striking attractive machine.

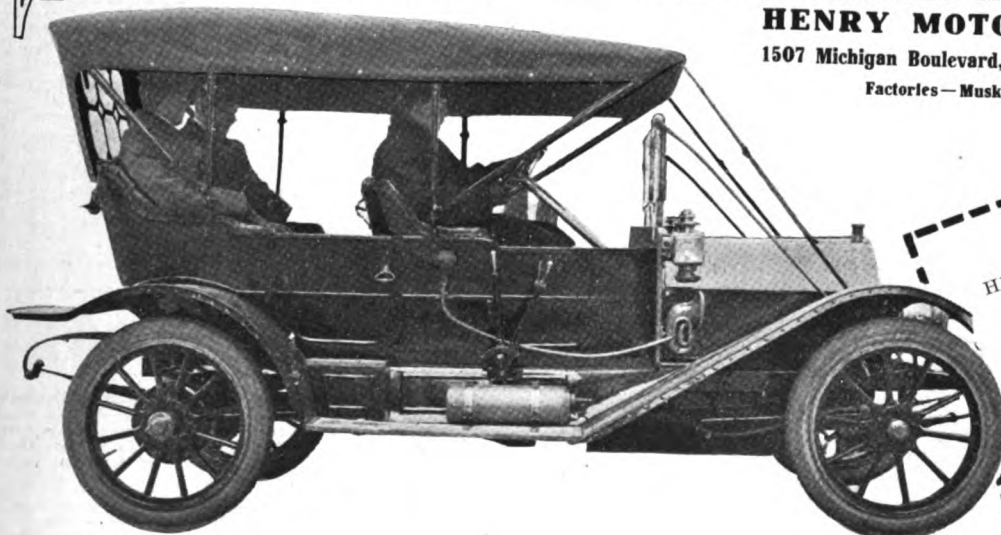
SPECIFICATIONS — HENRY "40"

MOTOR—Four cylinder, 40 H. P. Bore, 4½ in. Stroke, 5½ in. Three bearing crank and cam shaft. Cylinders "L" head, cast in pairs. Control on steering wheel and foot accelerator. Bevel seat valves. Spiral gears. Four rings on piston. **COOLING**—Water cooled; centrifugal pump, vertical tube radiator. Fan attached to motor, driven by cleated "V" belt. **LUBRICATION**—Circulating, inside spiral gear driven pump, pressure feed through crank shaft, direct to bearings. **IGNITION**—Jump spark. Dual ignition. Splitdorf magneto and dry cells. Control on steering wheel. **CARBURATION**—The perfect Rayfield. **CLUTCH**—Multiple disc. All steel plates. 43 friction surfaces. Running in oil. Ball thrust bearing. **GEAR SET**—Selective, located amidships. Three speeds forward and reverse. Gears sliding on square shaft. High speed, through square jawclutch. Imported F. & S. Annular bearings throughout. Full, covered, universal joint between clutch and transmission. **BEARINGS**—Crank shaft, three-Parsons' white bronze (die cast). Cam shaft, three bronze. Clutch spindle, Parsons' white bronze. Gearset, F. & S. annular ball. Rear axle, ball. Front axle, F. & S. ball. Steering knuckles, hardened steel. Steering gear, ball thrust. **RUNNING GEAR, ETC.**—Wheelbase, 116 in.; tread, 56 in. Wheels, 10 spokes front, 12 rear. Tires, front and rear, 34 x 4 inches on Q. D. rims. Front springs, semi-elliptic, 39 x 2 inches; rear springs, three-quarter elliptic scroll and 52 x 2 inches. Front axle, pressed steel, box type; rear axle, pressed steel. Drive shaft enclosed by pressed steel torsion tube. Brakes, service and emergency, internal on wheels. Frame, pressed steel offset front. Steering gear, irreversible worm and sector, 17 inch wheel.

The garage that carries the "Henry" line for 1911 will be the foremost in its territory and will do the biggest business. This we can prove to you. We can show you the most complete, choicest and most profitable line of machines this country has ever had. We need a few more progressive dealers who appreciate the value of a line like the one we are offering the public for 1911. Write for complete specifications and our special agency proposition.

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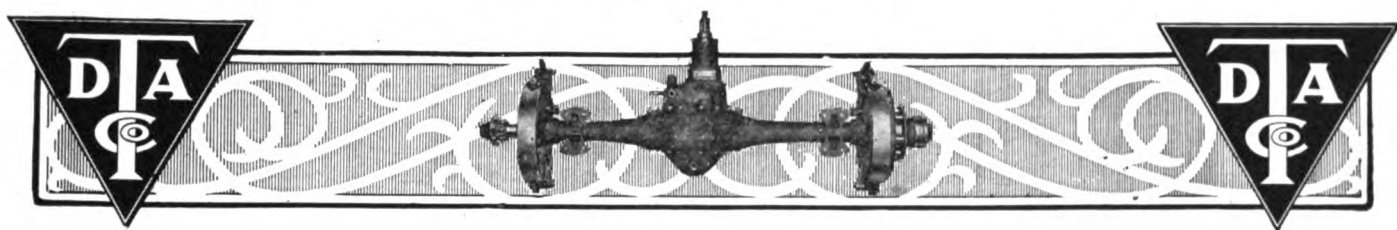


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Kindly send me your books and specifications of the full Henry Line and special agency proposition.

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Timken-Detroit Axles are a Thoroughbred Quality Product

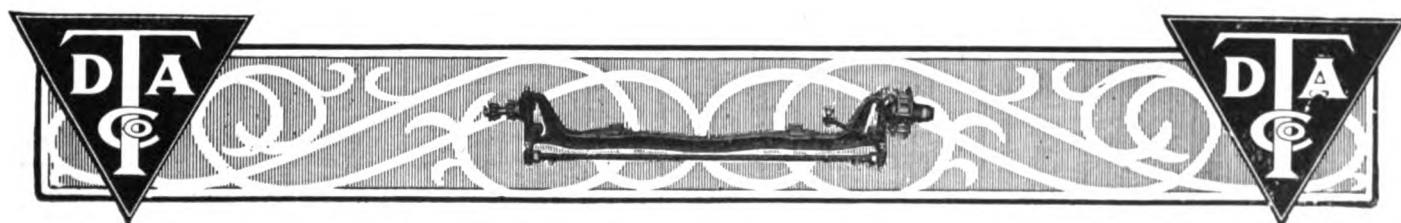
Graceful, cleancut and staunch in appearance, they have that indefinable something which marks the work of the master designer.

The superb exhibit which evoked such intense interest at the New York Shows will be duplicated at the Chicago Show.

A cordial invitation to this exhibit is extended to everybody, but especially to car manufacturers, engineers and designers.

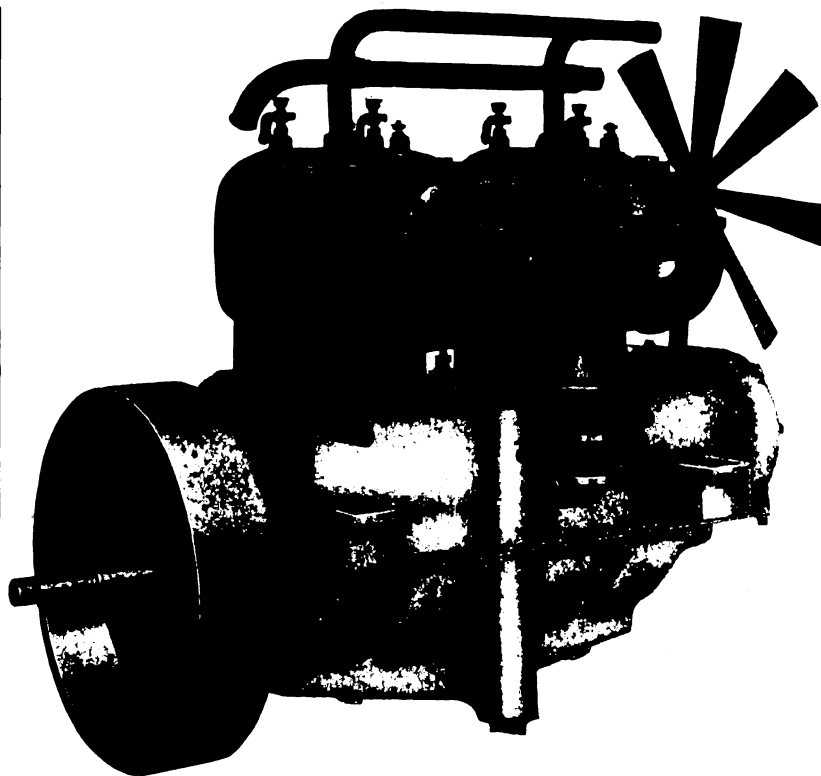
THE TIMKEN-DETROIT AXLE CO., Detroit, Mich.

At the Coliseum January 28th to February 11th.



A GOOD MOTOR

FAR superior to the ordinary run of motors. Those who are in earnest about getting the best will find the Parker motor a strong attraction. It looks the part and is as good as it looks.



SMOOTH-RUNNING and quick. Very flexible, pulling strongly on low-speeds and with ample power for high-speed work. Economical in fuel.

The Parker Motor

THE PARKER MOTOR is a 4 cylinder, 4 cycle, water cooled motor $4\frac{1}{2} \times 5$ bore and stroke; cylinders cast in pairs offset 1 in.; the motor is exceedingly well water jacketed, valve head being particularly well water jacketed. The cylinders are of the L type; valves being all located on the right side and the valves are $2\frac{3}{4}$ in. with a lift of 5-16 in. for both exhaust and intake valves; pistons are $5\frac{1}{2}$ in. long with four eccentric piston rings to each piston. The connecting rods are drop forged, heat treated and 12 in. long, being nearly two and one-half times the stroke and making a very quiet running motor. The crank case is in two sections of aluminum; the water is circulated by a gear driven pump on the left hand side of motor; the crank shaft is of .40 carbon steel, heat treated and having three long bearings ground, the shaft diameter is $1\frac{3}{4}$ in.; the front bearing $3\frac{3}{4}$ in., the middle $3\frac{3}{8}$ in., and rear bearing $4\frac{3}{8}$ in. long. The cam shaft is of .30 carbon O. H. steel with cams and timer gear flange forged integral; it is carbonized, hardened and ground to size, and, like the crank shaft, it has three long bearings, the surfaces of which are ground to size and run in special babbitt bearings.

THE PARKER MOTOR CO., Hartford, Conn.

By far the most conspicuous car in the high-price division is the Cunningham, made by James Cunningham & Co., big carriage builders at Rochester for over seventy years—N. Y. Mail.

At no Automobile Show before has one car caused so much comment and so completely pre-

The Cunningham car made in Rochester, and sold in New York by the Whiting Motor Company at 1802 Broadway, is one of the real interesting touring car exhibits, and a crowd is to be found at all times around the Cunningham chassis.—N. Y. Globe.

dominated the field as the Cunningham at the Palace Show in New York.

Any one familiar with automobile construction cannot fail to realize even after a cursory examination, why this is true. The

Cunningham

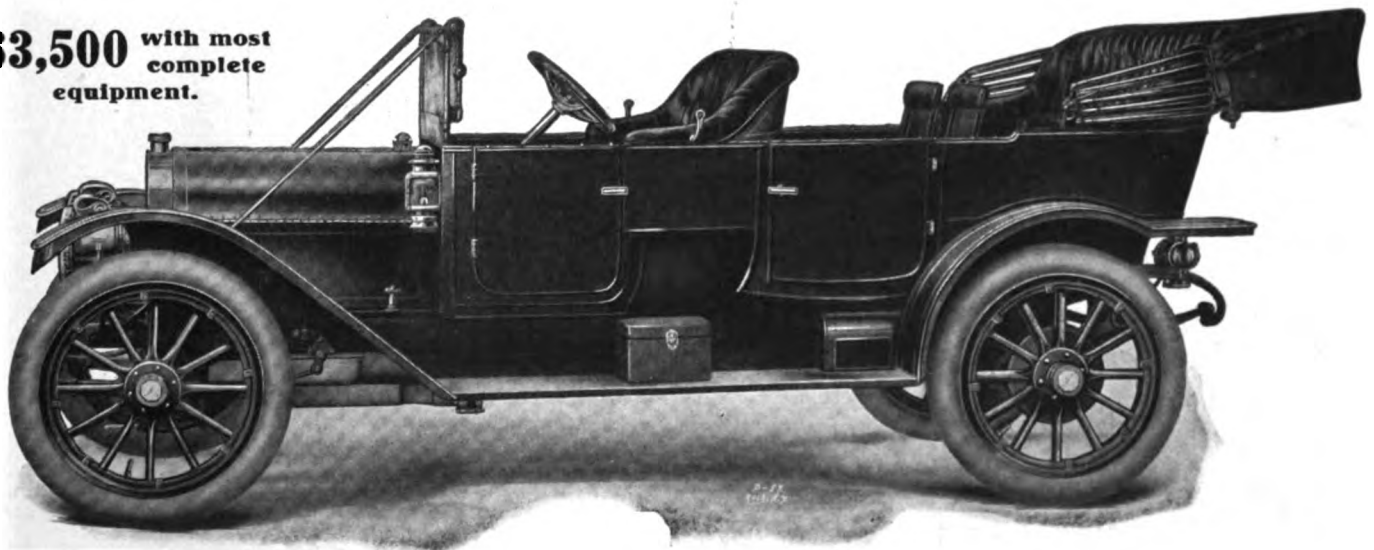
Car, in no feature, is an innovation or an experiment.

It is such a masterful and clever combination of the up-to-date and accepted practice that it completely eclipses everything in its field.

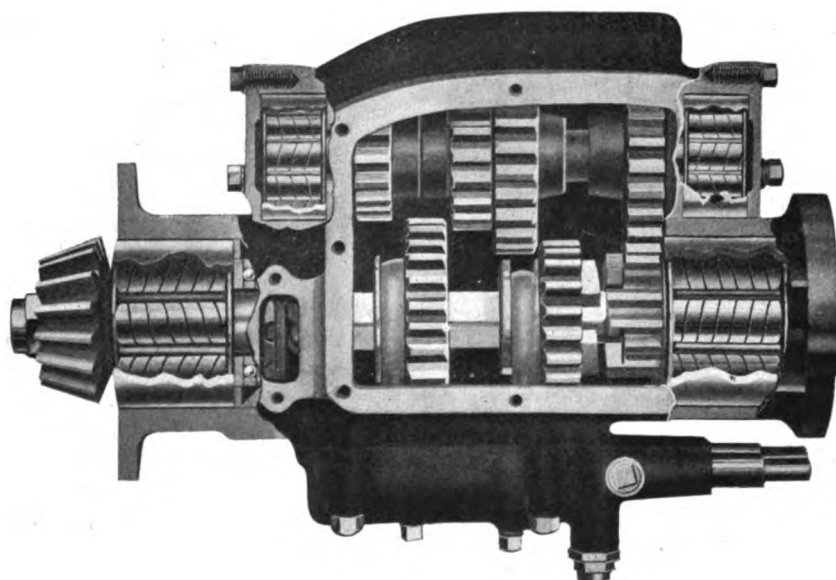
This is a pretty strong statement, but as the most extravagant claims The Cunningham Company can possibly make have already appeared in print, editorially, written by the best posted writers on the subject, it does not seem to be out of place to repeat and emphasize these facts.

JAMES CUNNINGHAM, SONS & CO., Desk D. 16 Canal Street, Rochester, N. Y.

\$3,500 with most complete equipment.



Hyatt Roller Bearings



STRONG evidence of the high efficiency and durability of the Hyatt Roller Bearing is afforded by its general adoption, followed with its continued use year after year by the leading car builders.

There are two distinct types of the Hyatt Roller Bearing—the Standard Type, involving generous size in proportion to the Duty—the High Duty Type providing a short compact bearing of great carrying capacity. Combinations of these two types are possible to meet more closely certain conditions.

The ability to effectively cover this wide range of applications is an exclusive feature of the Hyatt Roller Bearing.

Hyatt Roller Bearing Co.

Detroit, Michigan

Breech-Block' Type

"The Plug with the Handle"

The GENTLEMAN'S Plug
The DOCTOR'S Plug

They work on any car,
with any kind of spark,
magneto or battery.

The Breech Block gives more power,
can be instantaneously cleaned.



The Breech Block plug is the GENTLEMAN'S PLUG;
no wrench, no tools; just one quick twist
and the inter-locking threads are unlocked;
the porcelain is in your hand
ready to be wiped off,
can be instantly replaced
without stopping your engine.

Quick Inspection

Breech block plugs are fitted with triple threads,
which lock in place on soft copper seats.
No leaks—guarantee compression.



Closed-End

Spit Fire

by Far the Best

BUY THE GENUINE.

INSIST UPON THE NAME

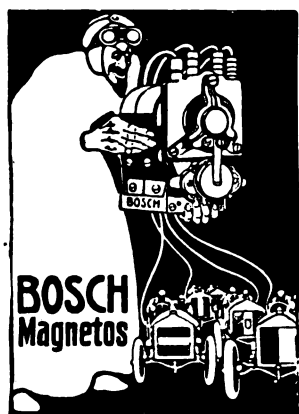
STAMPED ON THE HANDLE.

Prices: All Sizes Battery or Magneto Type { \$1.50 each with Porcelain Insulator.
\$2.00 each with Mica Insulator.

THE IDEAL PLUG FOR MARINE USE

For sale by all dealers and jobbers or

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Is Universal on High Grade Cars and Trucks

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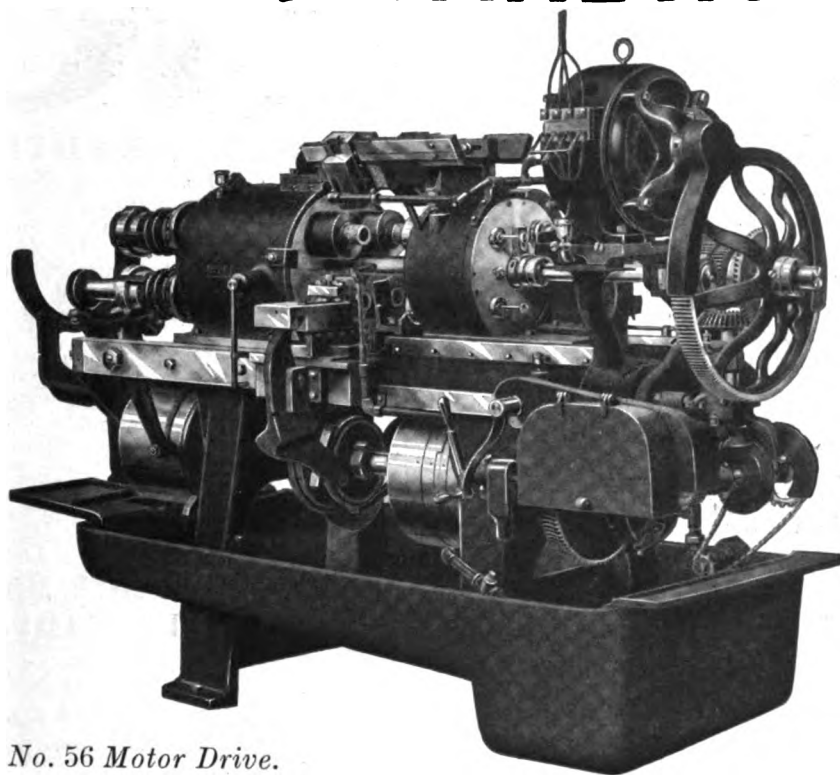
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Wasting of power occurring from slipping of belts, play in gears and reversal, has been eliminated by the single Belt or Motor Drive on the Acme Automatic.

Power reaches the working tools directly—thru one pulley, and one set of gears, and if electricity is the power any standard direct or alternating current motor may be used.

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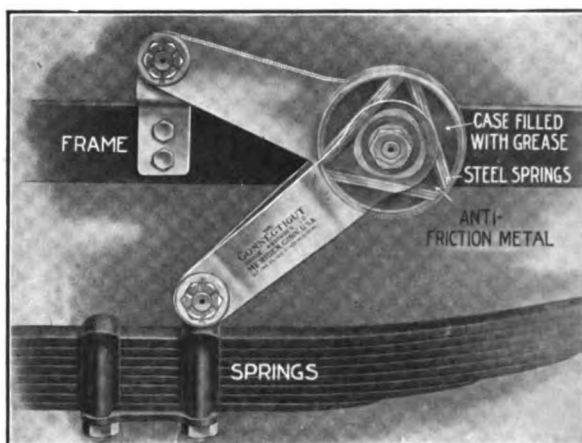
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No friction washers to be replaced. No constant adjustments.
No liquid to be removed. No wear or friction on absorber itself.

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Send for descriptive circular No. 24—it's free.

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CONNECTICUT SHOCK ABSORBER COMPANY, Inc., 20 Britannia Street, MERIDEN, CONN.

PREMIER

NEW YORK SHOW EMPHASIZES PREMIER LEADERSHIP

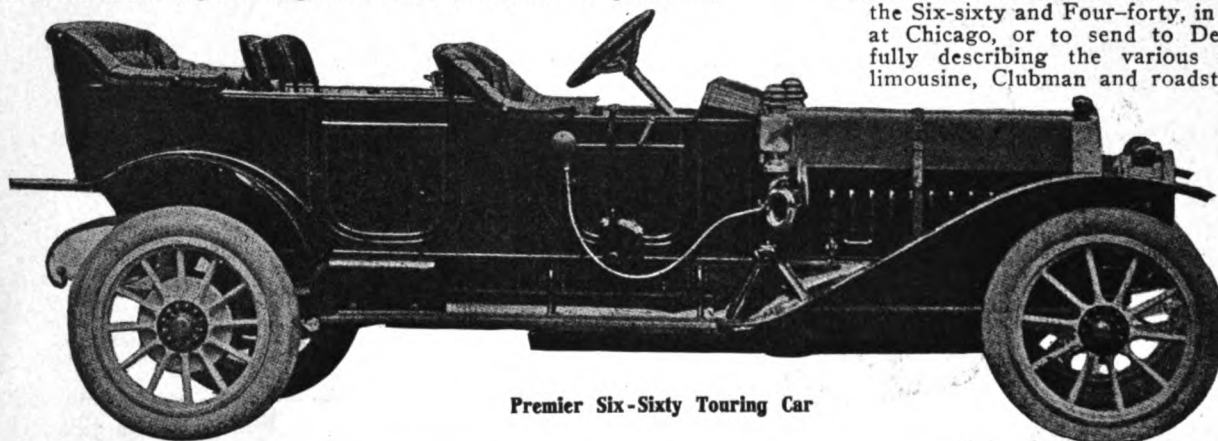
In the Madison Square Garden automobile show in New York another distinct tribute was paid to the design and finish of Premier motor cars. This great exhibition was visited by the experts and authorities of the industry and Premier cars were recognized by them as being leaders among the small number of makes representing the standardization and refinement attained by American motor cars.

It was the consensus of opinion that when the splendid automobiles in the big building were compared point for point that

the Premier had features always equal and more frequently superior to those shown with pride by competitors. Time and again the motor wise returned to the Premier chassis, recognizing its superiority.

The strongest frame, the largest brakes, the longest springs, the easiest steering gear, and many parts wonderful in their design and construction, were features which influenced these people in their choice.

A cordial invitation is extended to all to inspect these cars, the Six-sixty and Four-forty, in space E-4 in the Coliseum at Chicago, or to send to Department S for literature fully describing the various types—vestibuled touring, limousine, Clubman and roadster.



Premier Six-Sixty Touring Car

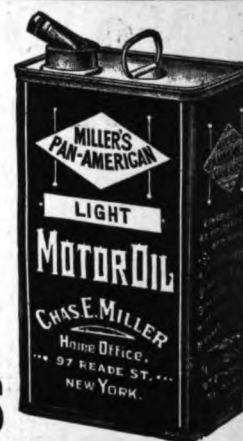
Send to Dept. S for a new booklet, "Motoring Across a Continent."

PREMIER MOTOR MFG. COMPANY

Licensed Under Selden Patent.

Salesrooms, 312 N. Delaware St. Factory, Georgia and Shelby Sts.

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WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

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It Carries The Loads



No creaking nor straining—just a strong, steady pull. You have tremendous power at your fingers' ends and you feel it. We are the originators of the direct shaft drive for the Commercial Car. Our 1911 Type "A" Chassis has undergone many improvements, some of which are: Gear Ratio now 7-1; a great increase in pulling power—3 speeds forward and 1 reverse; selective type sliding gear transmission—expanding and contracting Cone Clutch faced with tough Thermoid Lining. Motor increased to 24 h. p.—a governor that prevents racing the engine while car is empty—also many other changes. The picture shows the solid worth Monitor users get out of their cars.

Perfect Score, New York Reliability Run

awarded October 28-29. Also on same dates a clean score for time and perfect mechanical construction was given the Monitor in the Chicago American run, when it covered the 211 miles ahead of schedule time, with no broken parts, carrying a 25% overload.

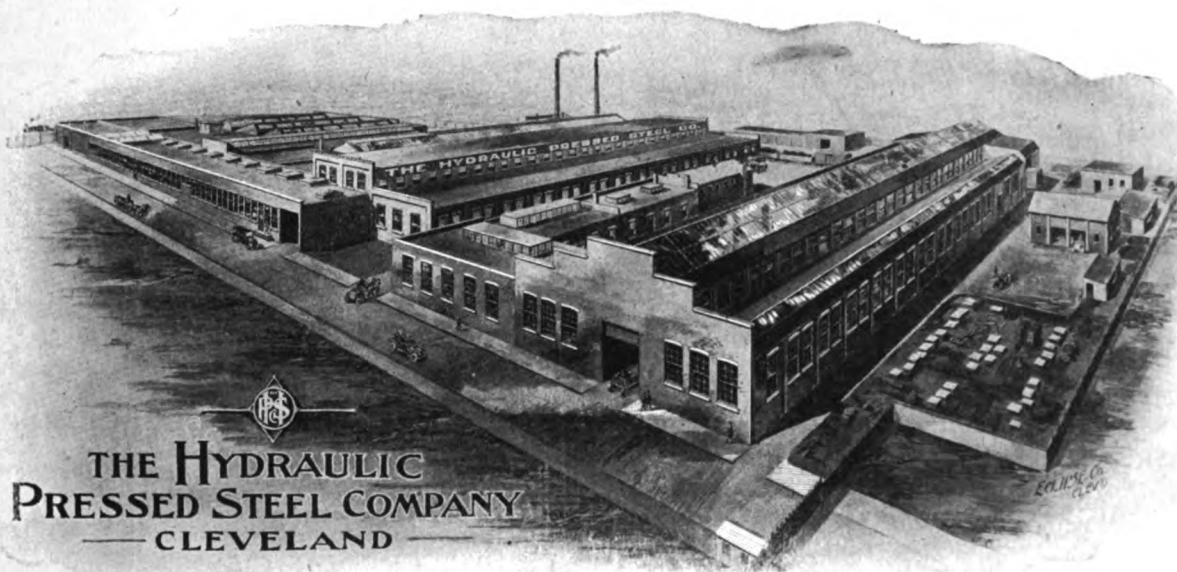
At Chicago Auto Show, February 6 to 11, 1911

visit Section "N," main floor of Coliseum, and see the latest Monitors, meet our people and get acquainted. There's a Monitor for every business. New bus just added. Write for new catalog.

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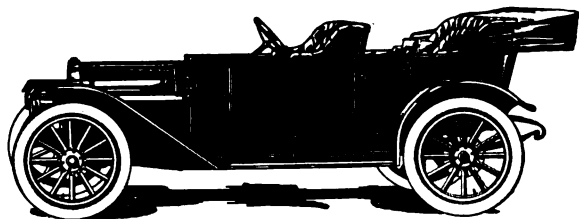


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PRESSED STEEL COMPANY
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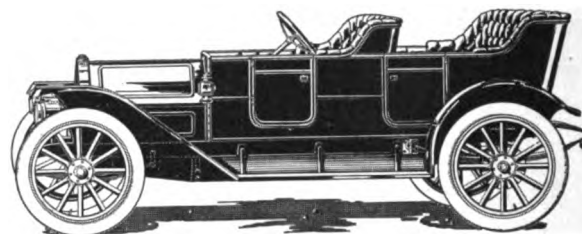
R. B. McMULLEN, Gen'l Sales Agent, Chicago, Ill.

THE ELIMINATION OF EXTRAVAGANCES

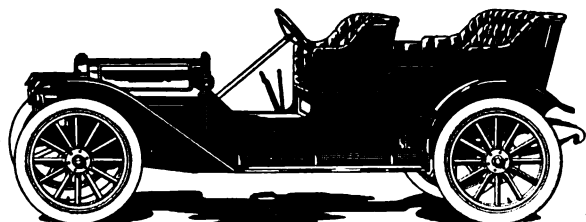
now is in process in the automobile business. There are a lot of them for which the purchasers of automobiles have paid high and which brought them no return. It was by avoiding these extravagances, these costs of high living, so to speak, that DeTamble cars were placed on the market at prices that set a new standard of values. You can't pay more and get your money's worth. Study the specifications.



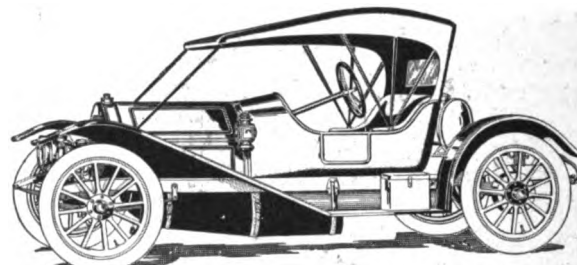
Model K—7-Passenger Fore Door—\$1,675.



Model J—5-Passenger Fore Door—\$1,200.



Model H—5-Passenger Touring Car—\$1,150.



Model G—2-Passenger Roadster—\$1,000.

MODEL K 40—45 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; full floating ball bearing rear axle; 120-in. wheel base; 34-in. wheels; Splitdorf magneto; dual ignition; Rushmore gas lamps; Prest-O-Lite tank; three oil lamps; horn; mohair top; wind shield; speedometer; tools; jack and pump.

SPECIFICATIONS:

MODELS G-H-J—36 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; semi-floating ball bearing rear axle; 115-in. wheel base; 34-in. wheels; magneto and dual ignition system; Rushmore gas lamps; generator; three oil lamps; tools; jack and pump.

Catalog and full details of our complete line sent on request. [Open territory] proposition for live dealers.

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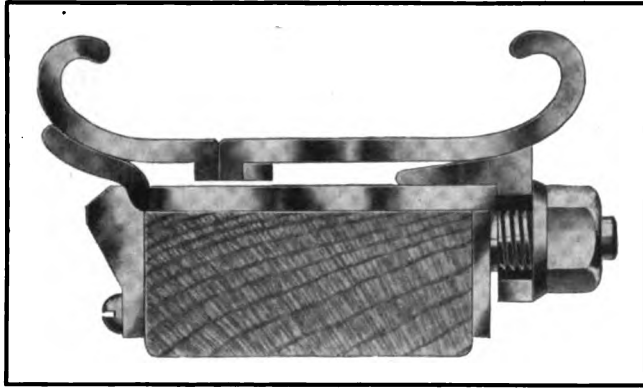


Let us help in solving that MANUFACTURING PROBLEM

- ☛ By furnishing your axle equipments in carload lots as you need them and when you need them.
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- ☛ We are specialists in this line and our experience is at your disposal.

THE AMERICAN BALL BEARING CO.

L. S. & M. S. Ry. and Edgewater Park
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THE STANDARD UNIVERSAL QUICK DETACHABLE DEMOUNTABLE No. 3

For Olincher Type Tires Only

This rim is in effect a Standard Clincher Rim that has been made separable. A number of L shaped frets extend around the inner edge of one section, which correspond to a number of raised lugs or teeth on the other section. In assembling, these two sections are brought together so that the frets and lugs are in a position to engage. A slight rotary movement then completes engagement and a definite lock is accomplished by means of a spring hinge device. The rim is mounted on a well-known and popular demountable equipment and, as a whole, is strong, thoroughly safe and always dependable. It stands the test of service.

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BROWN-LIPE GEAR COMPANY BROWN-LIPE-CHAPIN COMPANY

Announcement

On January 1st our Differential Gear Department began to be operated by the Brown-Lipe-Chapin Company in its magnificent new plant; capacity, 200,000 Differentials per year.

Our Transmission and Steering Gear Departments will continue as heretofore only with facilities increased many times.

We are preparing a line of Transmission, Steering and Differential Gears for trucks and delivery wagons and will work up this branch of the business, which for lack of facilities we have been unable to properly do heretofore.

All Will be Brown-Lipe Gears

Both plants will be under the same management and selling organization; the stockholders of the Brown-Lipe Gear Company holding a controlling interest in the new company. Both factories at Syracuse, N. Y. High quality and prompt service is our motto.

H. W. CHAPIN, General Manager

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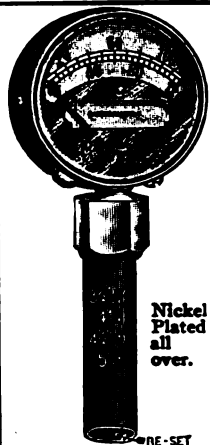
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If you are not using a Tire Gauge get one of these at once; and if you are using one which you cannot depend on, send for an Edelmann Tire Gauge, guaranteed absolutely accurate.

This Gauge is self indicating, and the pointer hand remains at the maximum pressure until it is re-set. To operate, simply press against Tire Valve, then read the pressure at your convenience.

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Nickel Plated all over.

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are the best and most economical Spark Plugs money can buy; use less battery power; are proof against carbon, soot and every other kind of short circuiting matter.

You cannot beat Reliance Spark Plugs even though you may pay more.

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Send for our 48-page Booklet—"Ignition and Spark Plug Talk"—Free.

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ARNOLD ALARM

The Perfect Electric Signal for Automobiles and Motor Boats

Send for Special Offer. The best retailers proposition ever presented. Send now.

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THE RUTENBER MOTOR

SURPASSES THE HIGHEST EXPECTATIONS

To Be Found in Pleasure Cars, Commercial Cars, Speed and Pleasure Boats

The RUTENBER will be found to replace the larger part of other makes of motors when they have found themselves out, BUT you will find no car that has a RUTENBER motor in it that will ever necessitate a new motor, except that it be replaced with a new model RUTENBER to get the benefit of the up to date improvements.

We assume that nothing is made but what can be made better, but we will be the first to make that improvement that will improve a Rutenber Motor.

What size motor do you want and what for?

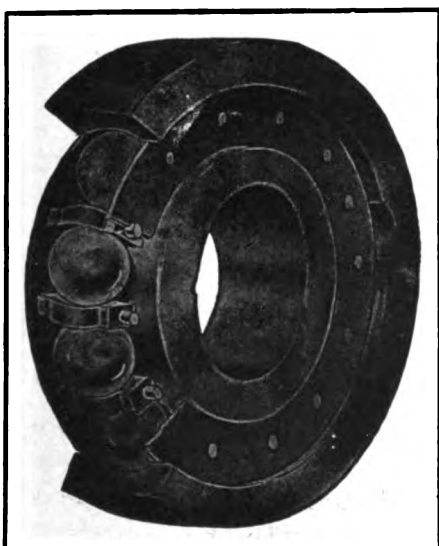
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Sales Department, Marion, Indiana

The Pioneers to Employ 92%
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SCHAFER Ball Bearings Fear No Comparison

AXIAL PRESSURE Thrust capacity of SCHAFER BEARINGS being equal to one-third the advocated load, the thrust capacity of all other makes of bearings being equal to only one-quarter of their advocated load—and since our advocated loads are far greater than those of any other known ball bearing—SCHAFER BEARINGS enjoy a 60 per cent. greater thrust capacity than all other makes. May we prove this to you?

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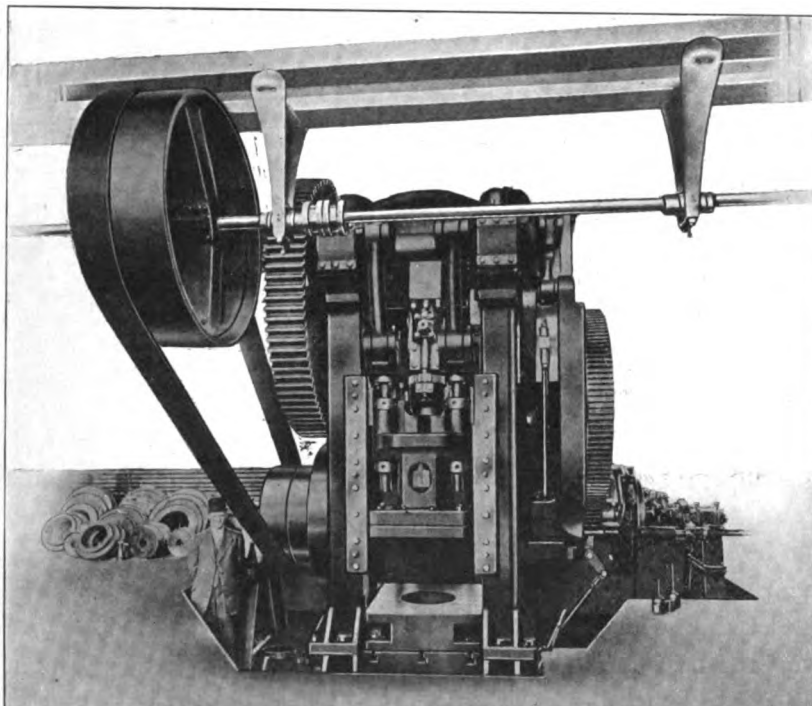
Accurate and durable. Every part made of the finest kind of material, fashioned by skilful craftsmen and assembled under the most rigid inspection. Reliable and efficient in service.

High tension, with stationary, removable coil. No moving wire on the armature. Each spark is followed by an arc flame. This arc flame will ignite a much weaker mixture than with the spark produced by the usual coil ignition. A variation of 45 degrees is allowed on the magneto shaft, which means 45 degrees in the crank shaft for a four cylinder, four cycle motor, as the magneto runs at crank shaft speed. The retarded spark is just as efficient as the advanced spark, making it easy to start the motor with a quarter turn of the crank, with the timing lever fully retarded.

Get the catalog of the "Pittsfield Ignition System"

PITTSFIELD SPARK COIL COMPANY, Dalton, Mass.

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THIS press has a capacity of 5000 perfect pressed steel brake drums every 24 hours.

WE CAN FURNISH DRUMS UP TO ONE-HALF INCH THICK AND TWENTY-FOUR INCHES DIAMETER.

**Our Low Prices
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WE carry hundreds of tons of raw material to insure prompt delivery. We are positively making the most perfect pressed steel brake drums in the country.

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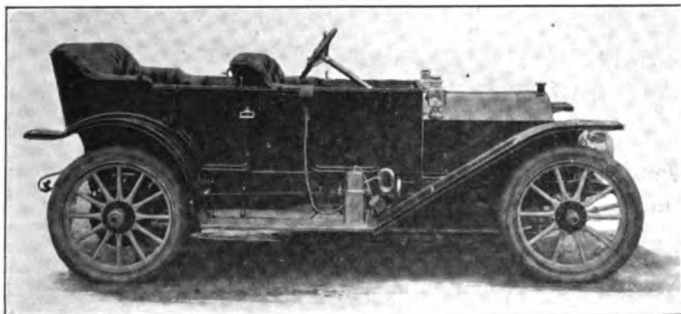
THE BOSSERT COMPANY, Utica, N. Y.

Weight 70 Tons. Pressure 1000 Tons.

Pullman

AUTOMOBILES

For 1911



Model O Pullman Vestibuled Touring Car.

The Reason of Pullman Success

is not due to the fact that our engineers have discovered any *wonderful ideas*, nor at any time since the first Pullman car was built, have any radical or untried stunts been introduced. From its inception, the Pullman Co. has adhered to one fixed policy, namely, building the best automobile possible. Pullman automobiles are well and favorably known. They have never had an off year. Our aim has always been to not only keep abreast of the times but to so equip and manage our organization that Pullman automobiles could be manufactured and sold more advantageously than any other car.

Our complete line will be on exhibition at the Chicago show, Space D-3 in the Armory. Many Pullman agents will be there and you should not lose this opportunity of making their acquaintance. They who sell our product are best qualified to speak of the agency possibilities.

PULLMAN MOTOR CAR CO.

Licensed under Selden patent.

Drawer W

YORK, PA.

Read what the inventor of the Klaxon Warning Signal says of

The Edison Storage Battery

MILLER REESE HUTCHISON, Engineer,
50 Church St., New York.

December 14, 1910.

EDISON STORAGE BATTERY CO., West Orange, N. J.

Gentlemen:—On May 1st, 1910, I placed one of your B-4, 5 Cell Ignition Batteries on my automobile, for operating my Klaxon Warning Signal.

Since that time, now practically eight months, my car has been driven approximately 12,000 miles in daily service.

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They have never failed to operate the Klaxon, and are today up to full voltage and evidently good for several months more, before re-charging will be necessary.

I consider this a wonderful performance and, as the inventor of the Klaxon, cannot too highly recommend your battery for use therewith.

Very truly,

(Signed) M. R. HUTCHISON.

This remarkable performance is simply characteristic of the service that the new 5 Cell ignition size Edison Storage Battery is giving. The Edison is radically different. It is not subject to any of the ills of other storage batteries. It is not injured by overcharging, by complete discharge nor by standing idle for any length of time, either charged or discharged. Its weight is only 72 per cent. that of the lead battery of equal capacity. Its life is many times as long.

It is the most successful ignition battery that has ever been brought into the field. Write us for full information today.

Edison Storage Battery Company

116 Lakeside Ave.

ORANGE, N. J.

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OF AUTOMOBILE MANUFACTURERS, INCORPORATED

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Sixty Exhibits of Commercial Cars—25 Exhibits of Motorcycles—200 or More Exhibits of Accessories.

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Absolutely accurate and every one interchangeable.

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The Great Money Savers

OF course you know that Ajax Tires are guaranteed for 5000 miles.

BUT do you realize what this means to you?

IT is a positive assurance of 1500 more miles per tire, which figures a saving of 30 per cent in tire costs.

WE help you in every way to save tire money.

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National 40

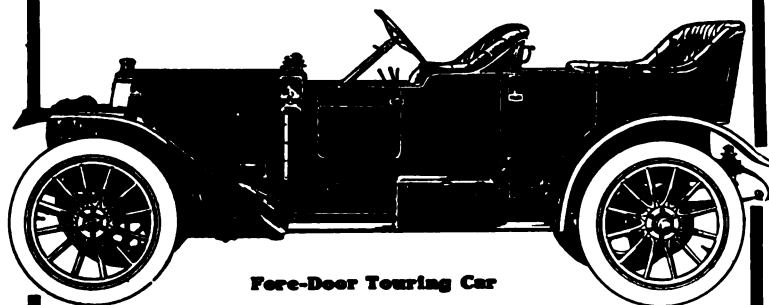
Monarch of the Road King of the Speedway

Speed, power, style, prestige are embodied in every detail of design and construction of the majestic National 40. This is the car which triumphed in leading speed classics of 1910 on road, hill and speedway.

The National stock car has endured in the acid tests of sustained high-speed flights with wonderful freedom from mechanical troubles. No other car has demonstrated such marvelous power, stamina and consistency. Time and again Nationals finished in one-two order in important long races.

There is a joyous feeling of pride in ownership of the National 40, which won such signal honors at the Vanderbilt, Elgin, Fairmount Park, Algonquin Hill, Fort Jefferson, Syracuse, Wilkesbarre Hill and on the Atlanta and Indianapolis Speedways.

And the beauty of lines and luxury of the National "40"—in touring car, limousine or roadster—are not surpassed by any other motor car built, regardless of the cost.



Fore-Door Touring Car

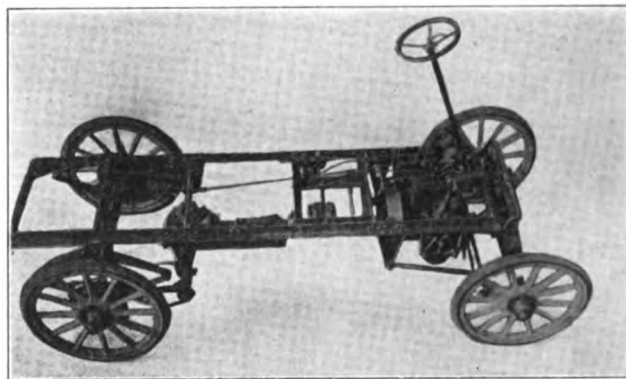
Numerous racing victories in all parts of the country keep National 40 before the public the year 'round. This continual publicity is of great value to every National dealer.

Our present distributors will take every car we can build and more. We desire wider distribution, however, and have an attractive proposition for dealers in unallotted territory. *Better wire.*

Open Touring Car, Open Toy Tonneau, Speedway Roadster, \$2,500
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Fore-door Seven-passenger Touring, 3,000
Luxurious Limousine, Fore-door, \$4,000; Open, . . . 3,750

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Licensed under Selden patent.



WHERE THE MONEY GOES— Repairs

It costs from \$25 to \$50 to tear down the average truck, clean and examine its parts and re-assemble—exclusive of the actual work of repairs. It costs more to get at the defective part than it does to make it right—BECAUSE OF THE WAY THEY ARE PUT TOGETHER.

Economy trucks will save 75% of your repair bills—BECAUSE OF THE WAY THEY ARE PUT TOGETHER—Unit assembly.

Economy engines can be entirely removed or replaced in 45 minutes; transmissions in 35 minutes; radiators in 15 minutes, and jack-shafts in 20 minutes, either part without disturbing the other two and all without disturbing the body.

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The Economy elements are the best the market affords; Davis motors, Ball transmissions, Muncie jack-shafts, Tut-hill springs, Sheldon axles, Hayes wheels, Long radiators and Foster steering gears.

Bodies to suit your requirements.

The Economy truck is not the development of an engineer's idea; it is the result of experience. It is built from the users standpoint. We've been at it four years.

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We do not require the purchase of a demonstrator.

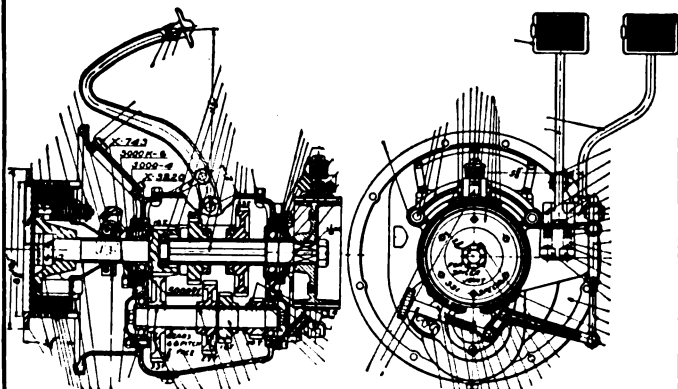
ECONOMY MOTOR CAR COMPANY
Bissel and Cass Sts. JOLIET, ILL.



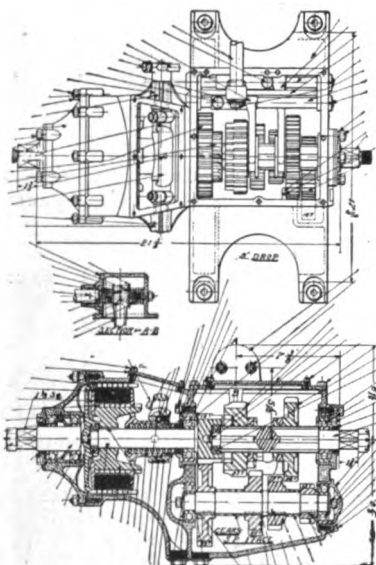
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*The standard for years.
With improved features
and added refinements for*
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Model 95—Unit Transmission, Brake and Control Pedals, with Raybestos-faced Disc Clutch. 25-35 H. P.



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Transmissions,
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(93)

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and **STAMPINGS** for
Commercial Cars
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The Car You'll Be Proud To Own

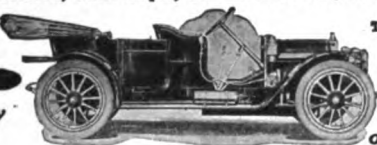
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Model 11-H Special—Semi-Racer Toy Tonneau—\$2700
All models have 50 H. P., 4 cylinder motor, 121 inch wheelbase

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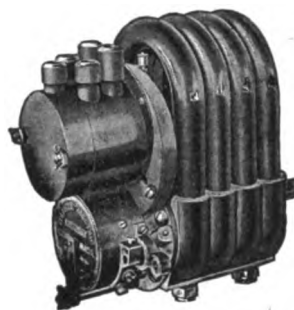
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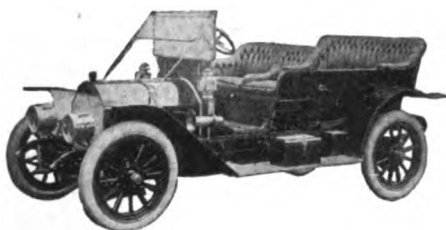
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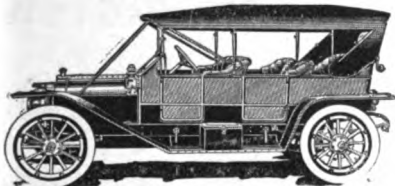
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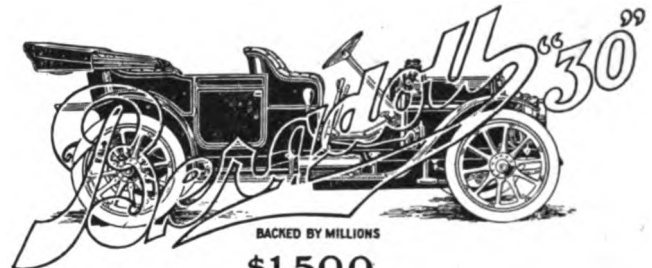
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Don't take chances on the wiring of your car, when it actually **COSTS LESS TO USE THE BEST.** You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

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Manufacturers of Metz Runabouts—lightest and most economical automobile in the world.

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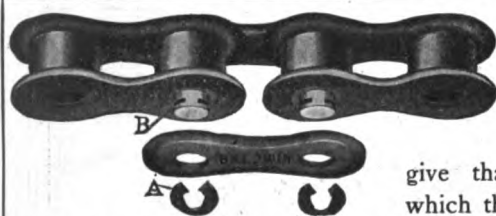
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STILL RUNNING RUNNING STILL.



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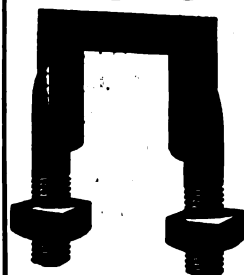
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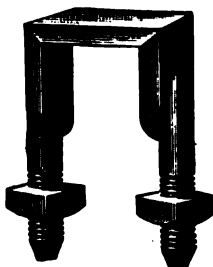
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from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?

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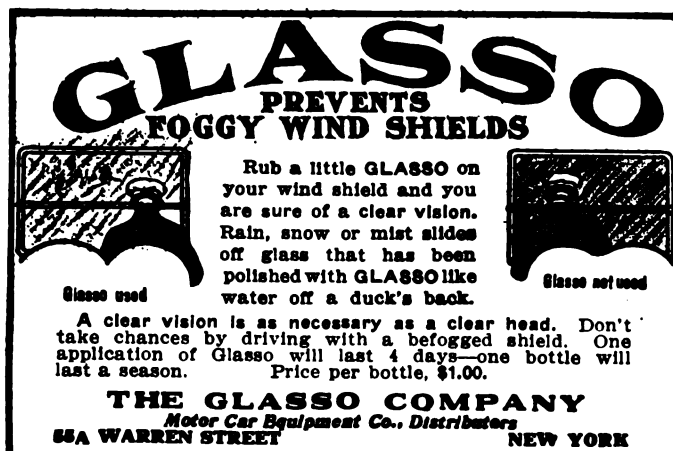
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and other makes practically as good as new which are cheaper and better than some new cars. Prices range from \$750 up. Second-hand small cars taken in exchange.

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QUALITY

Genuine Tool Steel Tubing made from electric melted High Carbon Tool Steel containing chromium.

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Saves weight and cost of machining.

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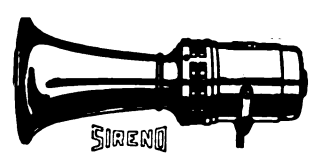
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The choice of motorists who realize the need of a long range warning and the value of press-the-button operation, yet who desire not to startle or offend those whom they warn. It is the signal of a gentleman and a careful driver.

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Maxwell-Briscoe Motor Co.

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The 1911 OWEN BERLIN represents the highest development of closed car construction. It is the embodiment of comfort with exclusive features affording greater convenience than can be enjoyed in other cars. The easy running qualities of the OWEN BERLIN are unequalled because of large wheels, OWEN spring suspension and minimum vibration from the long stroke motor. Combining these features with interior appointments of the most luxurious character, the OWEN BERLIN (seating six) is a car certain to please the most exacting.

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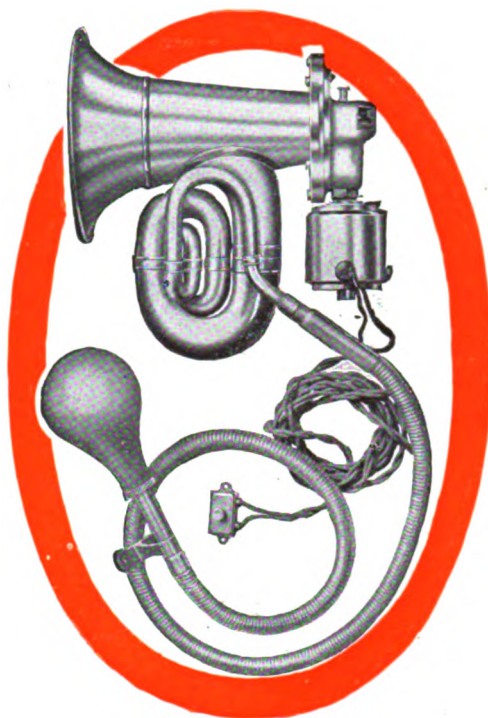
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**COMBINATION
KLAXON**

Price \$50

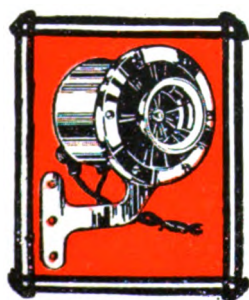
The Combination Klaxon represents the utmost in warning signal perfection.

It is designed to meet the demand of discriminating motorists who seek the best, regardless of cost—who measure economy by reliability, durability and quality rather than by “cheapness.”

The combination of the famous Klaxon with a reed horn of highest quality and characteristic Klaxon workmanship provides an instrument which will satisfactorily meet every condition that may confront a motorist.

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In the combination Klaxon the deep vibrant note of the reed horn is doubly strengthened and intensified by its association with the Klaxon diaphragm and projector.

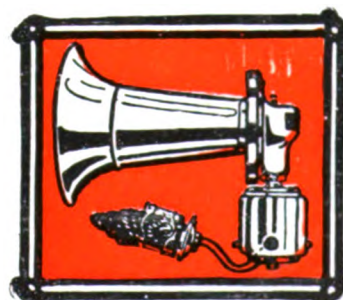


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WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

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In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

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THE MOTOR WORLD

A trade paper giving the
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Ten cents a copy—
Two dollars a year



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PIERCE-ARROW Car
is undoubtedly due
to the fact that it was
never built to meet
a price. A successful
car came first; price
second.

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The Tire That Has
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Makers Have Been Working
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The Hartford Wire Grip Non-Skid Tire is the *only* true non-skid that is resilient;

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The only non-skid that you carry right with you in the tread of the tire itself;

In other words, it is a *pneumatic* tire, and a non-skid tire combined;

Insure your car, its passengers and the public by putting them on your car *now*.

This tire is made in standard sizes, Dunlop, Hartford, Quick Detachable Clincher and Clincher; also in millimeter sizes.

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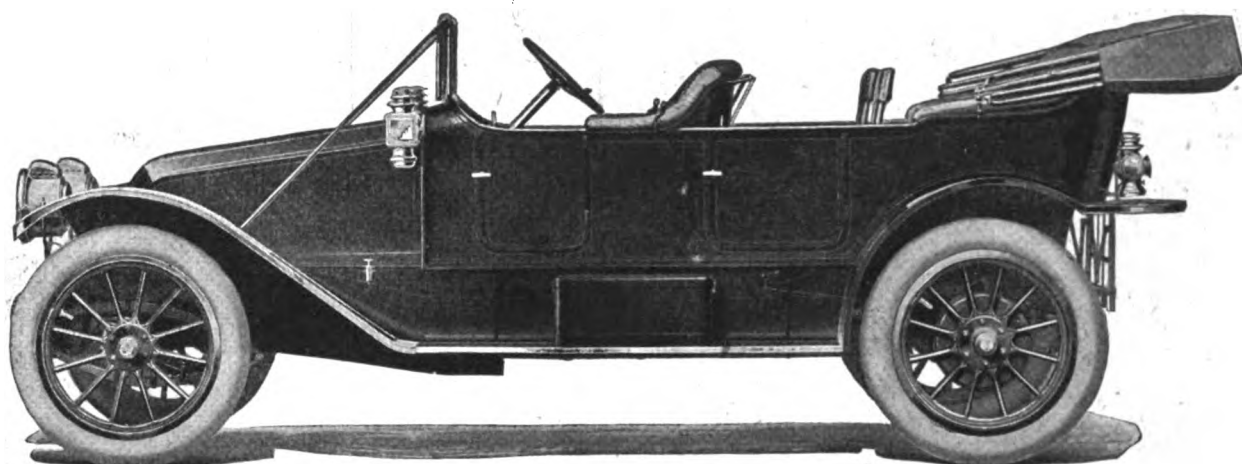
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BRANCHES—New York, 57th St. and Broadway; Chicago, 12th St. and Michigan Ave.; Boston, 863 Boylston St.; Philadelphia, 1334 Arch St.; Detroit, 256 Jefferson Ave.; Buffalo, 725 Main St.; Cleveland, 1831 Euclid Ave.; Denver, 1564 Broadway; Atlanta, Ga., 19 Houston St.; Minneapolis, 622 Third Ave., So.; Kansas City, Mo., 719 E. 15th St.; Dallas, Texas, 2029 Commerce St.; St. Louis, Mo., 19th and Locust Sts.

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Franklin "Big Six"



Franklin Model H is the only seven-passenger touring car built that does not eat up tires.

The whole secret of the exceptional tire service obtained from a Model H rests in the use of 38 x 5½ inch tires, rear, and 37 x 5 inch tires, front, on a car that weighs only 3300 pounds. Compare this tire equipment with that of other large cars. Tires on the H are not overloaded.

Model H is the lightest weight touring car of its size built. Light weight, with full-elliptic springs and a wood chassis frame, gives unequaled riding.

Everything about Model H is just right to give the best results. A feature which distinguishes it among other large cars is its remarkable road ability and the ease with which it can maintain a constant rate of speed up hills and on the levels. High power with light weight and perfect riding ease give it this advantage.

Model H has a six-cylinder motor. The smoothness of running, the superior power for hill climbing attained by a "six" are essential to any large car. The cost of a seven-passenger car warrants the high degree of efficiency not obtainable unless a six-cylinder motor is used.

The price of Model H with full equipment, including top, headlight, side lights and Prest-O-Lite tank is \$4500. Write in now for details.

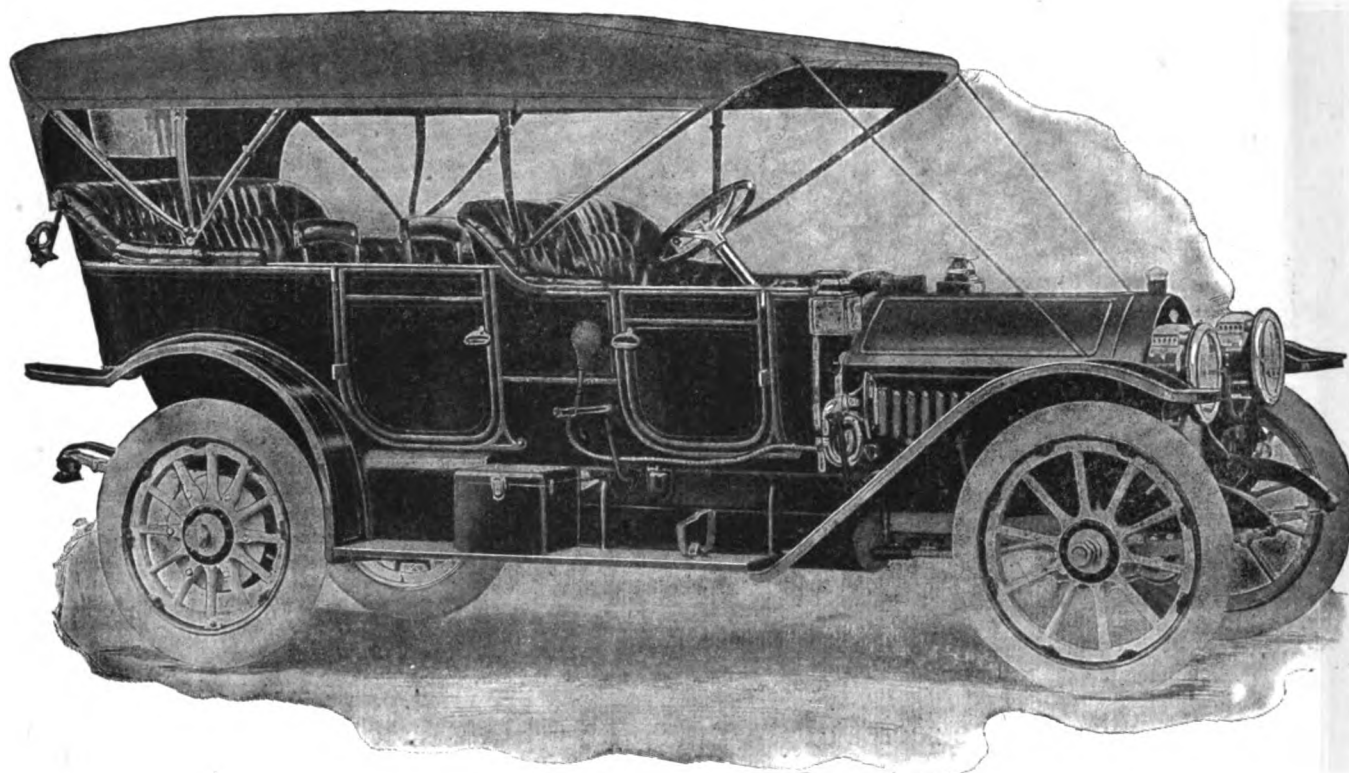
H H FRANKLIN MANUFACTURING COMPANY Syracuse N Y

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FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

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You'll see no car like this at the show



All models equipped with Amplex self-cranker

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Touring Car

Amplex

\$4,300

VALVELESS—SELF-STARTING

In the great gathering of motor cars at the Chicago show the Amplex is like a fairy-tale giant among people of ordinary stature.

It towers above the crowd, it stands out from the others, it lays a vital claim on your consideration—a claim peculiarly its own.

You will see various models, called by various names.

Their bodies are different in some slight degree, but at heart—in the engine—they are all the same, and the monotony will soon become dreary.

In the Amplex you find an engine the like of which is not at the show, or in America, for that matter.

Its like—its equal—has not been built.

It is the Amplex valveless engine.

In it you see the perfected development of the one perfect principle of gas engine construction and operation.

And you see that principle successfully applied, for the first time, to a really high grade car.

This remarkable engine is worthy of all the time and study you can give it.

It has no valves.

It is more powerful, at low speed and high, than any "four" or "six" of equal cylinder size.

It pulls with no let-down in its power-flow, without jerk or jar or vibration.

It is silent and smooth, and more flexible than the smoothest "six" that ever will be built.

It is as close to trouble-free and repair-proof as absence of valves can make it.

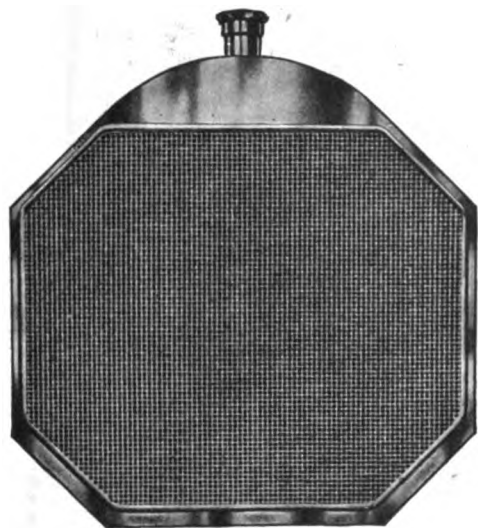
It has several hundred less parts than any "four" or "six" of the four-cycle type, and costs less to run and maintain.

It is all these—and more—because it has no valves.

The Amplex long since passed the experimental stage. It greets you today from the topmost peak of valveless gas motor development, and bids you ascend to its higher level and learn the full meaning of the advantages named above—advantages enjoyed by owners of no other car in its own high class.

SIMPLEX MOTOR CAR COMPANY, Dept. D, Mishawaka, Ind.

Licensed under Selden patent.



The Mayo—the radiator thoroughbred

¶ The question is not can you afford to use Mayo Radiators but rather, can you afford not to use them—presupposing you are claiming to build the best possible car.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

FRONT **AXLES** REAR
OF QUALITY

Let us help in solving that
MANUFACTURING PROBLEM

- ¶ By furnishing your axle equipments in carload lots as you need them and when you need them.
- ¶ Our standard equipments include all the improved types in use.
- ¶ I beam or tubular fronts, chain or bevel drive rears, cup and cone-annular or roller type bearing.
- ¶ We are specialists in this line and our experience is at your disposal.

THE AMERICAN BALL BEARING CO.
L. S. & M. S. Ry. and Edgewater Park
CLEVELAND, OHIO



Another Splitdorf Triumph

THE GREATEST NON-STOP AUTOMOBILE RUN IN THE HISTORY OF MOTORDOM

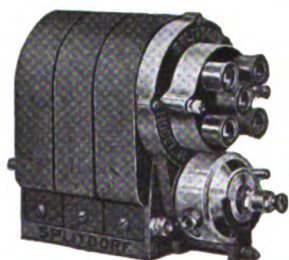
10,872 miles without stopping the motor, over country and city roads, just completed at Los Angeles, Cal., by a Flanders car equipped with

SPLITDORF MAGNETO

and

Common Sense Plugs

Think of it! 29 days of continuous running, and Absolutely Perfect Ignition during the entire time—not a single miss in the whole run.



No Magneto in the world has ever shown such Efficiency, Perfect Operation and Enduring Service.

This is the result of SPLITDORF Quality—the real reason why SPLITDORF Ignition is so deservedly popular among motorists everywhere.

Please write for Magneto Catalog.

Chicago: 319 Michigan Ave.
San Francisco: 520 Van Ness Ave.
Detroit: 868 Woodward Ave.
Boston: Motor Mart.
Los Angeles: 1226 S. Olive St.

C. F. SPLITDORF Walton Ave. and 138th St. New York

BRANCH, 1679 BROADWAY



WHEN the Directors of our Company decided to build pleasure cars, they realized that to make a success of an undertaking of this character, it would be necessary to build the best car in its class and for the first season at least to make profits the secondary consideration. Before contracting for any material, we found that in order to build a car such as we are building, it would be necessary for us to stand a monetary loss, which we are perfectly satisfied and prepared to meet, believing that a car such as the Bergdoll "30" cannot help but become profitable to both the manufacturer and the agent and a source of satisfaction to the owner.

We are building a popular priced motor car that is sold with a warranty for a period of one year covering material and workmanship of all parts of the car, even including springs. Its equipment consists of such high class features as CONTINENTAL Q. D. DEMOUNTABLE RIMS, for which manufacturers of cars selling for less than three thousand dollars are making an extra charge of from sixty to seventy-five dollars; LIVINGSTON CELLULAR RADIATOR, a type which is used only on high priced cars; ATWATER KENT UNISPARKER, which with BOSCH MAGNETO gives this car the very best ignition equipment known to the automobile world; SCHWARZ ARTILLERY WHEELS, brake equalizers, pressed steel rear axle housing and R. I. V. bearings throughout motor and transmission are other minor features embodied in the chassis of this wonderful little car.

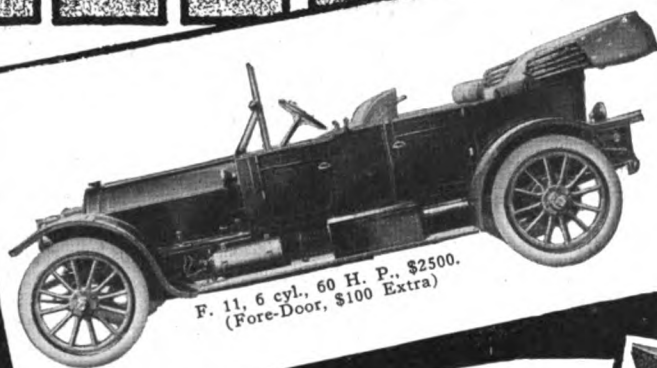
Touring Car	\$1,500.00	Toy-Tonneau	\$1,600.00	Colonial Coupe	\$2,500.00
Roadster	1,500.00	Coupe	2,000.00	Limousine	2,500.00
"4-Door"	1,600.00	Taxicab	2,000.00	Landaulet	2,600.00

We will exhibit at the Fifth Annual Automobile Show, Kansas City, Missouri, from February twenty-seventh to March fourth.

Complete description and specifications appear in our Advance Folder. Address Dept. S.

LOUIS J. BERGDOLL MOTOR COMPANY
 Thirty-First and Dauphin Streets PHILADELPHIA, PA., U. S. A.

KISSEL KAR



F. 11, 6 cyl., 60 H. P., \$2500.
(Fore-Door, \$100 Extra)

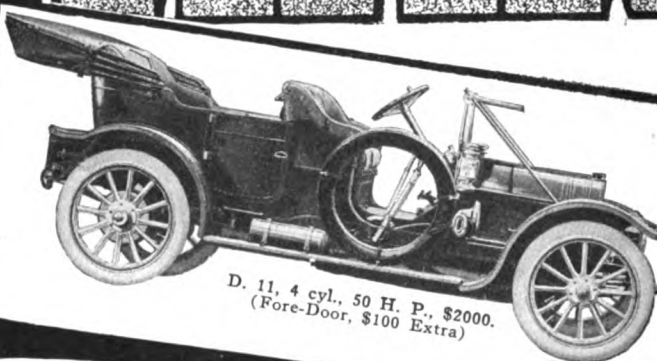
The Verdict at the Shows

Private buyers and dealers landslided to the Kissel Kar at the shows. This is proof that, side by side with all of the cars, the Kissel Kar is conspicuous for every essential that enters into a superior automobile.

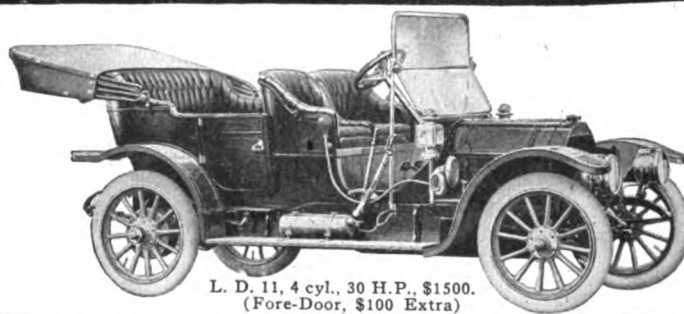
This big response from dealers is clinching proof of quality.

Today the dealer's success depends on handling the car that's right—and he is dead in earnest to find it. The most phenomenal number of dealers who picked the Kissel Kar is proof of the Kissel Kar quality.

For instance, Model F. 11, 6 cyl., 60 H. P., sells for \$2500 (fore-door \$100 extra). The big, luxurious "Six" is the car on which other manufacturers depend for big profits because of the class of buyers. We are simply a few years ahead in cutting out extravagant profits, and this is the sensational value for 1911.



D. 11, 4 cyl., 50 H. P., \$2000.
(Fore-Door, \$100 Extra)



L. D. 11, 4 cyl., 30 H. P., \$1500.
(Fore-Door, \$100 Extra)

Model D. 11, 4 cyl., 50 H. P., \$2000, won the great Los Angeles-Phoenix road race, defeating a big entry of higher priced cars and breaking the record **nearly four hours**. L. D. 11, 30 H. P., \$1500, has the same luxury of appointments, the same exceptional comfort-quality as the higher powered models and ranks with them as a conspicuously upper-class automobile.

The Kissel Kar 3 Ton Truck, \$3500, with double wheel drive at will of driver, and fuel economy, and other special features, makes a new record for utility and economical delivery.

DEALER OR PRIVATE BUYER

if you will see the Kissel Kar at the Chicago Show, you will find the reasons for its phenomenal success at the other shows. Pleasure cars, Space A-4, Armory; 3 Ton Truck, Section D, Main Floor.

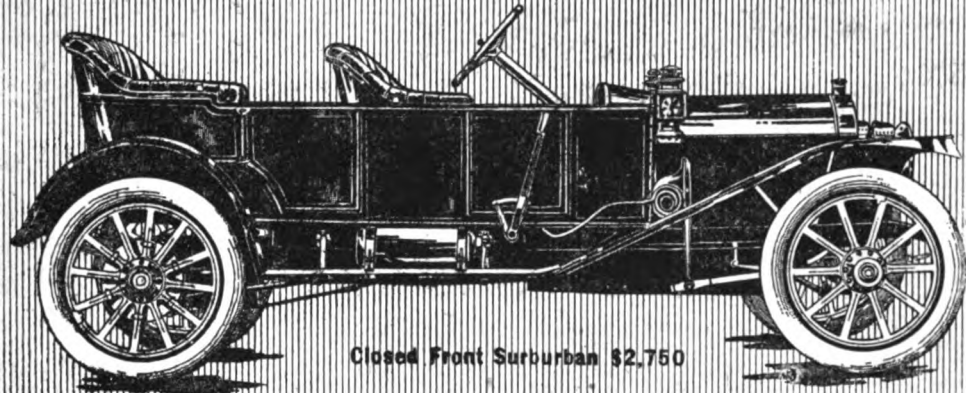
Portfolio illustrating and describing 17 models sent free.

KISSEL MOTOR CAR COMPANY, 159 Kissel Ave., Hartford, Wis.

Licensed under Selden patent.

THE MARMON

"The Easiest Riding Car in the World"



Closed Front Suburban \$2,750

Why It Wins

The Marmon is not built for racing purposes.

The fact that it won more of the important racing events of 1910 than any other car is gratifying, of course, and the fact that it established more new racing records than any other car is pleasing.

But these things are incidental.

Our primary purpose is to build the best motor car in the world for family purposes.

Our purpose in racing has been to discover and correct weaknesses in the car that no other test could search out.

The Marmon has won the lion's share of the big races and captured the lion's share of the records simply because its design and construction are such as to successfully withstand the terrific strains of high speed for hundreds of miles without let-up and because it is the easiest-riding car in the world—easy on its driver, easy on its tires and easy on its own mechanism.

Nordyke & Marmon Co.

(Estab. 1851)

INDIANAPOLIS, IND.

(Sixty Years of Successful Manufacturing)



LICENSED UNDER SELDEN PATENT



STEWART Speedometers

Do indicate your speed with remarkable accuracy—They do record the distance traveled to a single revolution of the road wheel—The mechanism is handsomely cased—The shaft and gear equipment is the best that has been devised.

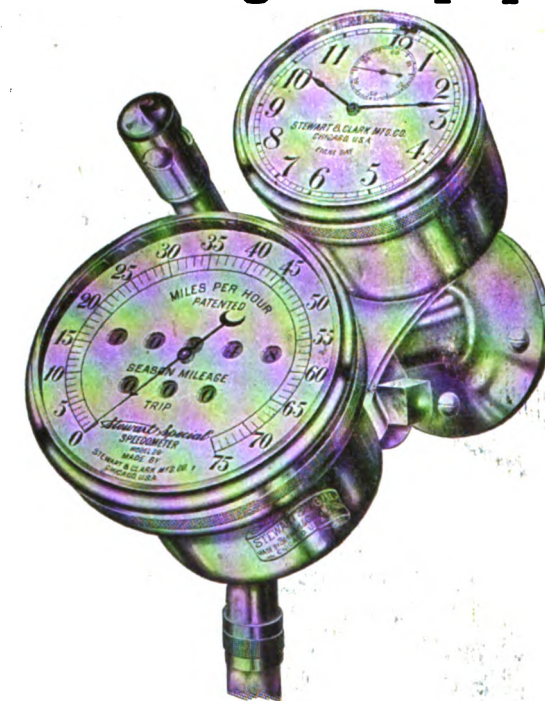
It is because of these important features that the Stewart Speedometer is given precedence over all others.

ASK YOUR DEALER

Stewart & Clark Manufacturing Company

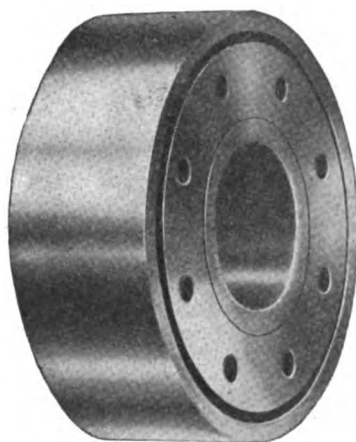
1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
New York: 1878 Broadway
Chicago: 1312 Michigan Avenue



Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years

Hyatt Roller Bearings



THE Short Series, High Duty Type, of the Hyatt Roller Bearing is furnished in shaft diameters from one to three inches inclusive, and in lengths from one inch upward. The Long Series is furnished in the same diameters and in lengths from two to three and one-half inches.

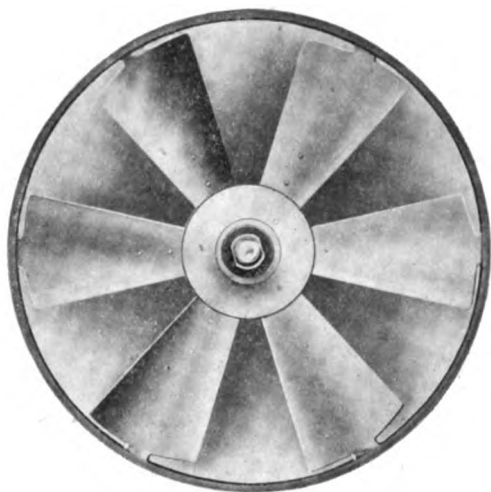
Special diameters and lengths to meet individual requirements, consistent with proper engineering practice, will be furnished promptly.

Short Lengths are made possible in the High Duty Type through the use of nickel steel rollers, properly heat treated and ground, operating on solid inner and outer steel casings, also heat treated and ground. Heavy loads can thus be concentrated on short lengths.

Hyatt Roller Bearing Co.

Detroit, Michigan

THE **McCORD** BALL BEARING **FAN** AUTOMOBILE



Unquestionably the

**MOST EFFICIENT
MOST DURABLE
MOST SATISFACTORY
MOST POPULAR**

Fan Produced.

There is a Reason

One piece reinforced or individual blades — steel or' aluminum — designed and built entirely in our own factory, resulting in —

**The highest grade of construction at the lowest price.
Fans in quantities and when you want them.**

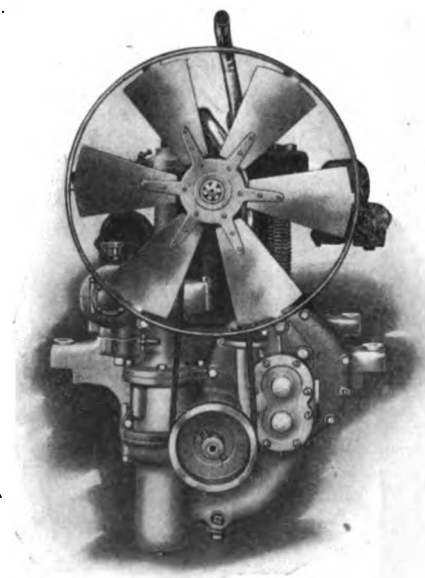
YOU will see them
on the up-to-date
motors — are they on
yours?

**SEE OUR EXHIBIT AT
THE CHICAGO SHOW**

**McCord
Manufacturing Company
DETROIT**

CHICAGO

NEW YORK





Start the Ball Rolling by Selling the First SIRENO in Your Town

Motorists are most all alike—some like one signal, some another.

The SIRENO appeals to the largest class of motorists, because—

It is a powerful, long-range signal for high speeds—

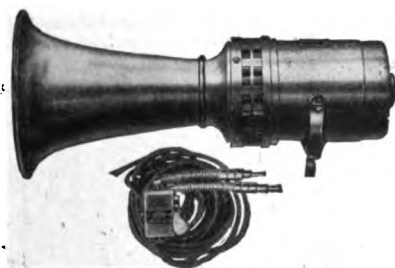
It is equally useful at short ranges, since its tone can be modulated by suitable use of the button—

Whether its low or its maximum note be sounded, it is not disagreeable—it lacks the explosive abruptness of some long-range signals.

The SIRENO is effective at long range because of its peculiar rising and falling tone. The longer the button is pressed, the higher becomes the note and the louder and more penetrating the tone.

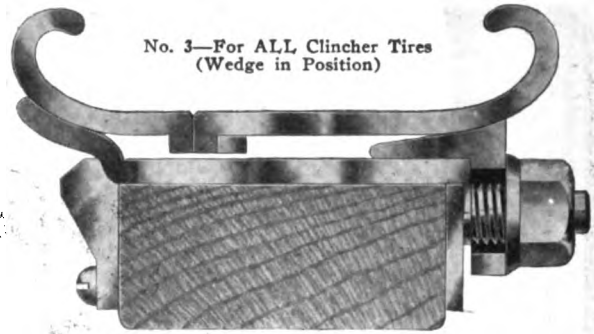
Most motorists are courteous. That is why the SIRENO appeals to them.

Write your name and address at the top of this page, send it to us, and we will mail you that folder
"A Co-operative Proposition."





No. 2—For ALL Straight Side and Clincher Tires (Clamp Unlocked)



No. 3—For ALL Clincher Tires (Wedge in Position)

STANDARDIZATION OF RIMS

that benefits

CAR BUILDERS—TIRE MAKERS—CAR OWNERS

The Standard Universal Quick Detachable Demountable Rims

"FIT ALL TIRES"

and

Solve the Problem of Interchangeability

25,000 sets of Demountable Rims and 135,000 sets of Quick Detachable Rims, practically 96 per cent. of the total number of Rims made in the United States, have been contracted for by the following manufacturers:

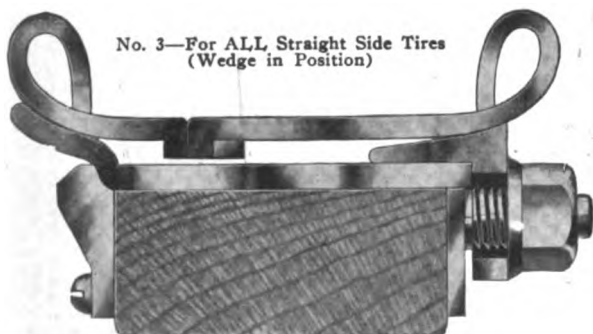
Aeme Motor Car Co., The
American Locomotive Co.
American Motor Car Co.
Anderson Carriage Co.
Argo Electric Vehicle Co.
Ashland Auto Co.
Atlas Motor Car Co.
Atwood Auto Co.
Auburn Auto Co.
Austin Auto Co.
Auto Car Co.
Badger Motor Car Co.
Baker Motor Vehicle Co.
Bartholomew Co., The
Bergdoll, L. J., Motor Co.
Borbein Auto Co.
Broc Electric Carriage Co.
Buick Motor Co.
Burg, The L., Carriage Co.
Cadillac Motor Car Co.

Canada Cycle & Motor Co.
Carhartt Auto Corp.
Chalmers Motor Co.
Columbia Motor Car Co.
Cook Auto & Carriage Co.
Corbin Motor Vehicle Corp.
Cunningham, Jas., Son & Co.
Davis, Geo. W., Carriage Co.
Dayton Motor Car Co.
Dietrich Motor Car Co.
E-M-F Co.
Ellis Motor Car Co.
Elmore Mfg. Co.
Fiat Auto Co.
Franklin, H. H., Mfg. Co.
G & J Tire Co.
Gabriel Auto Co.
Garford Co., The
Gramm Motor Car Co.
Great Southern Auto Co.

Grout Auto Co.
Hartford Rubber Works Co.
Hayes Wheel Co.
Hol Tan Co.
Hudson Motor Car Co.
Imperial Wheel Co.
International Harvester Co.
Inter-State Auto Co.
Jeffery, Thos. B., Co.
Johnson Service Co.
Kissel Motor Car Co.
Lexington Motor Car Co.
Locomobile Co.
Lozier Motor Car Co.
Luverne Auto Co.
McFarlan Motor Car Co.
McLaughlin Motor Car Co.
Mann-Aldrich Carriage Co.
Marion Motor Co.
Maxwell-Briscoe Motor Co.

Michigan Buggy Co.
Middleby Auto Co.
Mitchell-Lewis Motor Co.
Moline Auto Co.
Moon Motor Car Co.
Moyer, H. A.
Morgan & Wright
National Motor Vehicle Co.
Nordyke & Marmon Co.
Oakland Motor Car Co.
Olds Motor Works
Overholt Co.
Packard Motor Car Co.
Paterson, W. A., & Co.
Peerless Motor Car Co.
Pierce-Arrow Motor Car Co.
Pence Auto Co.
Pope Mfg. Co.
Premier Motor Mfg. Co.
Prudden & Co.

Pullman Motor Car Co.
Rauch & Lang Carriage Co.
Richmond Iron Works Corp.
Schacht Motor Co.
Selden Motor Vehicle Co.
Simplex Auto Co.
Stanley Motor Carriage Co.
Stearns, F. B., Co.
Stevens-Duryea Co.
Streator Motor Car Co.
Studebaker Auto Co.
Thomas, The E. R., Motor Co.
Traveller Auto Co.
Velie Motor Vehicle Co.
Waverley Co., The
Westcott Motor Car Co.
White Co., The
Willys-Overland Co.
Winton Motor Carriage Co.



No. 3—For ALL Straight Side Tires (Wedge in Position)

Write for illustrated descriptive matter.

**The
United Rim
Company**
AKRON, OHIO

8 DEMONSTRATIONS
CHICAGO SHOW



No. 1—For ALL Straight Side and Clincher Tires (Clamp Locked)

The STANDARD Friction Wind Shields

1 9 1 1

**Correct Styles for
Runabouts, Roadsters
and Touring Cars.**

Designed by Automobile Engineers
(Not an Experiment)

No Rattling — No Flopping

The Shield with the Positive Lock

Will Last as Long as Your Car

SPECIFICATIONS

HINGE—Friction supplemented by pawls which lock the shield in four positions. The tension of the pawls and friction is independent. While the pawls are sufficient to hold the top half of the shield in position, by tightening the friction surfaces the tension can be regulated to suit individual requirements. The pawls and ratchets are case-hardened steel. The cupped spring washers maintain an equal pressure on the fibre friction washers, thus insuring uniform and smooth action of the hinge. The interior of the hinge is thoroughly lubricated, and as the hinge is absolutely air-tight, evaporation of the lubricant is prevented and wear is practically eliminated.

FRAME—18 Gauge brass tubing. Glass, 3-16 in. imported French Plate or French Coach.

FITTINGS—Either African mahogany or Circassian walnut filling-in board; telescopic stay rods; brackets for attaching filling-in board to dash and Wind Shield to filling-in board; swivel bases for attaching stay rods to frame.

THE EAGLE COMPANY, Manufacturer

Automobile Department

98 Warren Street

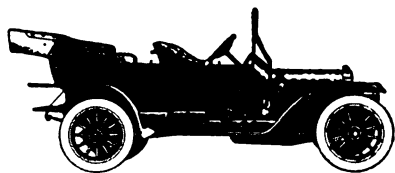
Newark, N. J.

THE KNOX CAR

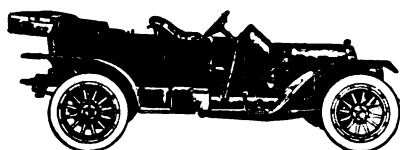
A High Grade Product of a High Grade Factory. Built for Every Motor Need.

Eleven different body designs, five different lengths of wheelbase and two chassis—the R, 4-cylinder, 40 H. P., and S, 6-cylinder, 60 H. P., are made to meet the individual wishes of the discriminating buyer.

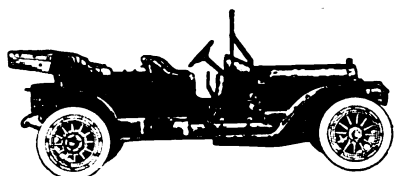
The Keynote of the Knox Is Service



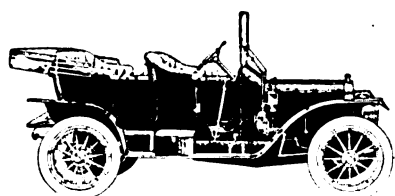
R—40 H. P.
7 Passenger Touring Car, Series B...\$3,500



R—40 H. P.
4 Passenger Torpedo Car.....\$3,400



S—60 H. P.
5 Pass. Tonneauette, Regular Front...\$4,900

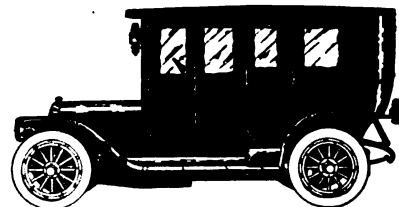


R—40 H. P.
4 Passenger Tonneauette, Series A...\$3,350

First, in meeting the wishes and original ideas of the man who has been through the game. The "Buy What We Have Or Leave It" policy finds no expression here.

Second, in day in and day out ability to keep going and do the work for which it is designed. All our racing experience, our ten years motor car manufacturing experience and all our energies have been developed toward this end so that the Knox car will last and stay new.

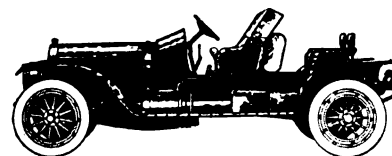
And finally we serve the public in the Knox beauty of design and finish. The smooth, clean aluminum bodies take a high and lasting polish. The Knox nickel and German silver trimmings give a final pleasing touch to the completed car.



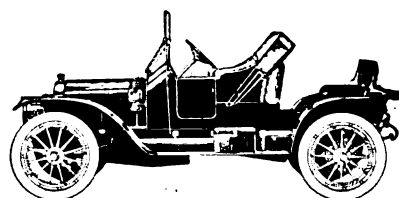
R—40 H. P.
7 Passenger, Fore-Door Limousine...\$4,400



S—60 H. P.
7 Passenger Touring Car, Series B \$5,000



S—60 H. P.—Double Rumble
Raceabout, Regular Front.....\$4,800



R—40 H. P.
Double Rumble Raceabout, Series A...\$3,300

Our New Catalog Will Tell You More

KNOX AUTOMOBILE COMPANY
Springfield Member A. L. A. M. Massachusetts

Speed Indicator Shaft Troubles Wiped Out

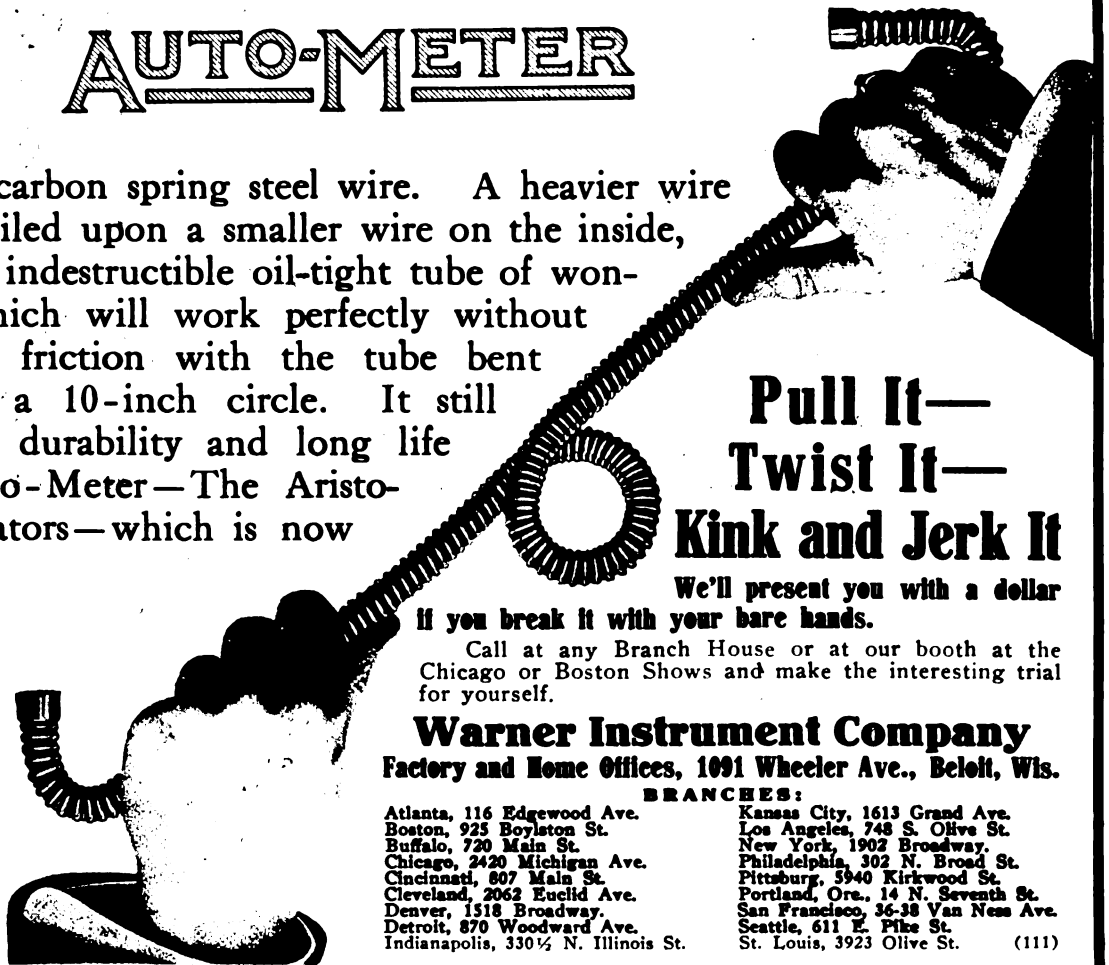
The only troubles ever experienced with the Warner Auto-Meter (bar accidents or misuse) have been Shaft Troubles. Notwithstanding that the Warner shaft has proved itself by far the most sturdy and free from trouble of them all. The new unbreakable Warner Shaft overcomes this small percentage—makes the Warner practically a **trouble-proof** instrument which will remain supremely accurate, dependable and reliable during the life of many cars.

The New, Uubreakable Driving Shaft of the

WARNER

AUTO-METER

is made from high carbon spring steel wire. A heavier wire on the outside is coiled upon a smaller wire on the inside, making a practically indestructible oil-tight tube of wonderful flexibility, which will work perfectly without jamming or undue friction with the tube bent into a segment of a 10-inch circle. It still further adds to the durability and long life of the Warner Auto-Meter—The Aristocrat of Speed Indicators—which is now in use on at least 90% of all pleasure vehicles costing \$2,000 or more, and is the invariable choice of the auto owner who can afford its purchase.



**Pull It—
Twist It—
Kink and Jerk It**

We'll present you with a dollar

If you break it with your bare hands.

Call at any Branch House or at our booth at the Chicago or Boston Shows and make the interesting trial for yourself.

Warner Instrument Company

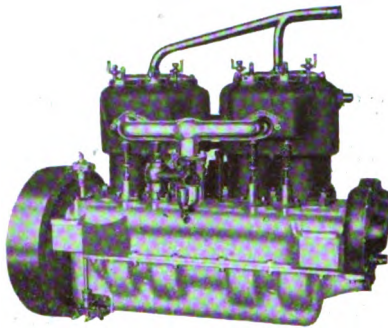
Factory and Home Offices, 1091 Wheeler Ave., Beloit, Wis.

BRANCHES:

Atlanta, 116 Edgewood Ave.
Boston, 925 Boylston St.
Buffalo, 720 Main St.
Chicago, 2420 Michigan Ave.
Cincinnati, 607 Main St.
Cleveland, 2062 Euclid Ave.
Denver, 1518 Broadway.
Detroit, 870 Woodward Ave.
Indianapolis, 330 1/2 N. Illinois St.

Kansas City, 1613 Grand Ave.
Los Angeles, 748 S. Olive St.
New York, 1902 Broadway.
Philadelphia, 302 N. Broad St.
Pittsburg, 5940 Kirkwood St.
Portland, Ore., 14 N. Seventh St.
San Francisco, 36-38 Van Ness Ave.
Seattle, 611 E. Pike St.
St. Louis, 3923 Olive St. (111)

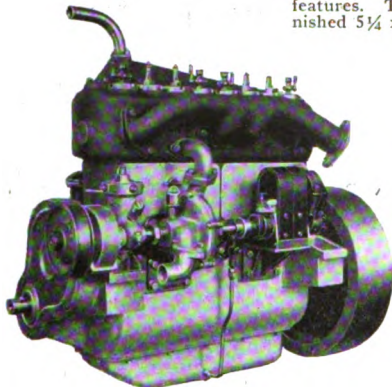
For months past you have been told about these new motors. They are now at the Chicago Automobile Show, Space 65.



Model "T"

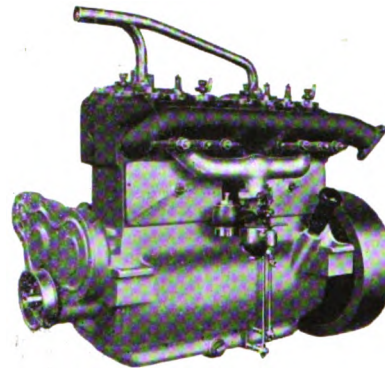
Cylinders 5 x 5¼-in., cast in pairs. "T" head type with main frame construction. Special automatic oiling system, liberal bearings, large valves and other notable features. This model of motor will be furnished 5¼ x 5¼ size.

These motors are the acme of high grade workmanship and design, embodying the up-to-date features. Examine them at the Chicago Auto Show, Space 65.



Model "C"

Cylinders 4¼ x 5¼-in., cast en bloc. "L" head type, furnished in main and subframe construction. Also supplied in complete unit power plant using multiple disc clutch and selective type transmission. This motor will also be supplied in 3¼ x 5¼-in. size.



Model "E"

Cylinders 4¼ x 5¼-in., cast in pairs. "L" head type, supplied in both main and subframe construction. This motor can be had in complete unit power plant using multiple disc clutch and three speed selective type transmission.

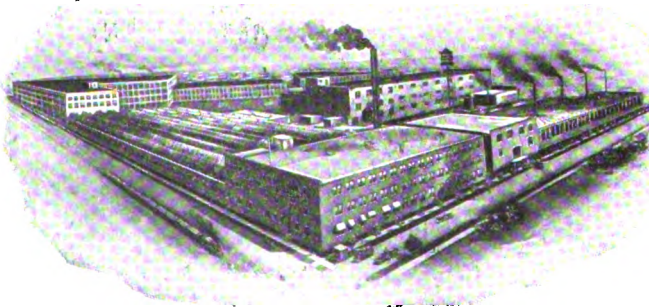
CONTINENTAL MOTORS

For the Season of 1912

The above mentioned motors are the ones that have caused such a furor in the motor world. Even during their "blue print" stage, they received the approval of many leading car manufacturers, and you can feel assured that every effort on our part has been made in producing those motors which are sure to satisfy the most exacting pleasure and commercial vehicle manufacturers. Prices and full data are now awaiting you. **EXAMINE THESE NEW MODELS AT THE CHICAGO AUTOMOBILE SHOW, SPACE 65. CONTRACT NOW FOR YOUR 1912 REQUIREMENTS.**

CONTINENTAL MOTOR MFG. CO., Muskegon, Mich.

Factory Representative
K. F. PETERSON
150 Michigan Avenue
CHICAGO, ILL.



Factory Representative
L. B. DOLTON
1010 Ford Building
DETROIT MICH.

Factory Capacity 25,000 Motors Per Annum

In every great show held this year, up to this writing, more pneumatic tired cars were equipped with Goodyear's than any other kind.

Goodyear No-Rim-Cut Tires Cost Nothing Extra Now

Last year these patented tires cost 20% more than other standard tires. Yet our tire sales jumped to \$8,500,000—multiplied three times over in that single year. All because these Goodyear features cut tire bills in two.

Tires Ten Per Cent. Oversize



This picture shows how Goodyear tires compare with other tires of equal rated size.

Goodyear tires average 10% larger—10% over the rated width.

That means 10% more tire—10% more air—10% added carrying capacity. It means, with the average car, 25% more mileage per tire.

Yet Goodyear tires, with this 10% oversize, cost no more than other tires without it. The extra size is free.

Why We Give It

Goodyear No-Rim-Cut tires, as we tell on this page, don't need to be hooked to the rim. They have 63 piano wires woven into each base, so nothing can pull them off.

Because of this feature—which we control—we don't need to worry about tires coming off. So we can make the tires oversize without any danger.

We do it—and without extra charge—to protect Goodyear reputation. For these are the usual conditions:

Motor car makers, in deciding on tire size, figure on expected load. That means the weight of the car as they sell it, and the weight of the passengers at 150 pounds each.

They supply a tire size fitted to this load, but rarely leave any margin. Tires are expensive, and motor car costs are now figured closely.

You add a top, perhaps—a glass front, gas lamps, gas tank, an extra tire and other heavy things. And passengers sometimes weigh more than 150 pounds each.

Nine times in ten the expected weight is exceeded, often by hundreds of pounds. That is fatal to tires. When you add 25% in overweight you cut down the tire mileage half.

The result is a blow-out. Sometimes it comes when the tire is almost new. Then one naturally blames the tire.

That's why we make Goodyear tires oversize. We allow 10% for extras. This year that additional size costs no extra price. Skimpy tires now cost as much as Goodyears.

Now these same tires—these oversize, No-Rim-Cut tires—cost no extra price. Our multiplied output has cut the cost of production. You can get all these advantages by simply specifying Goodyear No-Rim-Cut tires.

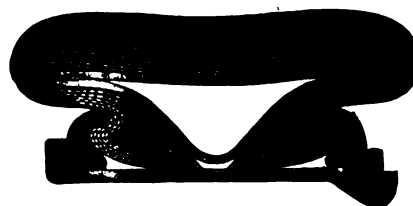
Rim-Cutting Impossible

We have sold nearly half a million Goodyear No-Rim-Cut tires. We have run them deflated in a hundred tests—as far as 20 miles. In all this experience there has never been an instance of rim-cutting. Think what that means. You can, if necessary, run home on a punctured tire.

This picture shows a Goodyear No-Rim-Cut tire fitted in the standard rim now used for quick-detachable tires. The same principle is used in demountable rims.

Goodyear tires are made to fit any rim. We picture this rim because it is almost universal on new model cars.

Note that the rim flanges—which are removable—are placed to hook outward with No-Rim-Cut tires. The tire comes against the rounded edge, making rim-cutting impossible under any condition.



The 63 Braided Wires

This picture shows how ordinary tires—clincher tires—fit this same rim. The rim flanges here must be placed to hook inward—to grasp hold of the hooks on the tire. These hooks are essential to hold common tires to the rim.

Note how the tire casing, when deflated, comes against the sharp hook of rim flange. That is what causes rim-cutting. A punctured tire is often wrecked in a moment.

No Hooks Needed

Goodyear No-Rim-Cut tires have no hooks on the base, for these tires don't need to be hooked to the rim. The reason lies in 126 braided piano wires vulcanized into the base of the tire. That makes the base unstretchable. Nothing can force the tire off the rim until you remove the flange. It is so secure that no tire bolts are needed—none are used.

When the tire is inflated these braided wires contract. Then the tire is held to the rim by a pressure of 134 pounds to the inch. So it can't even creep on the rim.

That is why hooks are unnecessary. That is why you turn the flanges out, so the tires when deflated come against a rounded edge.

This feature we control, and there is no other practical way to accomplish the purpose. The braided wires which contract under air pressure are essential to a safe hookless tire.

Sixty-four leading motor car makers have contracted for Goodyears for 1911. They know from experience what these two features mean

No Extra Cost

Remember that Goodyear No-Rim-Cut tires now cost no more than other standard tires. You get the oversize free. You get tires which can't rim-cut at the price of tires which may be wrecked in a moment. That difference is going to save motor car owners millions of dollars this year.

GOODYEAR
No-Rim-Cut Tires
With or Without Non-Skid Tread

Ask for the Book

Our Tire Book tells a score of facts which motor car owners should know. To follow it means to save half of your tire cost. It is full of tersely-told information. Write us a postal saying, "Send me your Tire Book," and the next mail will bring it to you. Please don't forget.

THE GOODYEAR TIRE & RUBBER COMPANY, Arthur Street, AKRON, OHIO

Branches in All the Principal Cities

Canadian Factory: Bowmanville, Ontario

We Make All Sorts of Rubber Tires

Main Canadian Office: Toronto, Ontario

See our exhibit at the Shows, Chicago, 51-52 Coliseum Gallery; Boston, F 543-544.



*Model 11-G, Four-Passenger Torpedo, \$2700.
121 inch wheelbase, 4 cylinder,
50 H. P. motor for all models.*

Seek Speedwell luxury above \$4000, but not below it

No car is contributing more than the Speedwell to that change in the current of public opinion which now prompts so many owners to hesitate at the highest prices which have heretofore obtained.

One of the marked tendencies of the 1911 season is a disposition to give grave thought to the question of motor car value—and the Speedwell is the inevitable gainer thereby.

Why should it not profit by closest comparison with cars of the \$4000 to \$6000 class?

As a little instance of Speedwell superiority inspect the steering gear. You will find that the Speedwell driver's safety is assured by the staunchness and precision of design. In place of the usual worm and sector gear the Speedwell boasts of a worm and complete gear. The removal of a single nut permits of four distinct adjustments of this gear, giving it four times the life of the ordinary style.

In the same way the drive line of the Speedwell has been gradually bettered until in the 1911 model a straight line drive is secured by flatter rear springs and an arched frame over the rear axle, thus enabling the Speedwell to deliver greater power

to the rear wheels than any other car of approximate bore and stroke.

Looking backward five years you find a loyal and satisfied Speedwell following—a mechanical reputation without spot or blemish.

It is a car of real beauty—the handsomest car in America in the opinion of many motorists.

Its makers believe that they could give no more to the buyer, in grace, in beauty, in ease, in comfort, and in service, if they followed the policy which has prevailed in previous years, and asked from \$4000 to \$6000.

Speedwell cars sell from \$2500 to \$2900—and at these figures comparison is seriously and sincerely urged with the highest prices named.

The Speedwell catalog, fresh from the presses and illustrated in color, will be of assistance to any prospective motor car buyer.

It points out the various features of superiority in Speedwell construction, and otherwise is an accurate guide to what you should look for in order to be able intelligently to compare prices and values of motor cars.

THE SPEEDWELL MOTOR CAR COMPANY

Licensed under Selden patent.

50 Essex Avenue, Dayton, Ohio

FISK

Dual Pneumatic Equipment With the REMOVABLE RIM for COMMERCIAL CARS

*Increases Daily Mileage
Reduces Upkeep Expense
Eliminates Vibration*

One tire may do double service or one
or both can be changed without delay

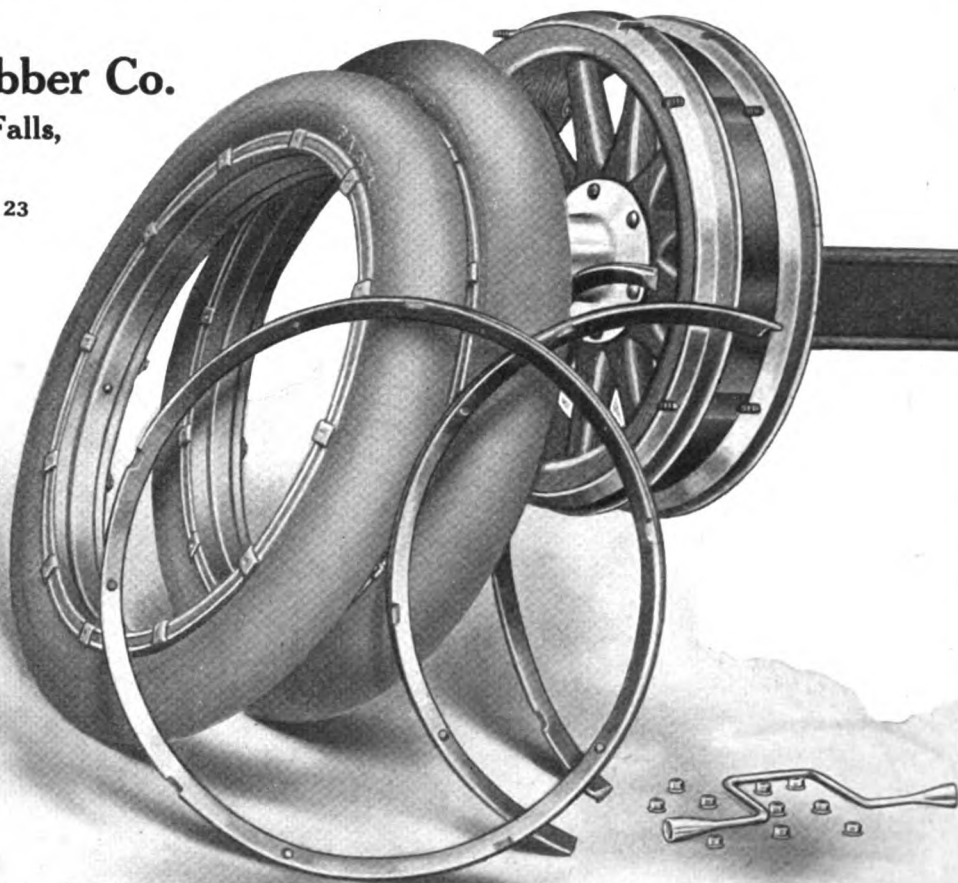
The Fisk Rubber Co.

Chicopee Falls,
Mass.

Department 23

At
Chicago
SHOW
Spaces 38
and 39
Coliseum
Gallery

23
Direct
Factory
Branches





Sampson power sufficient to pull a trailer, adding 50 per cent. capacity.



TRANSPORTATION is the big problem in the world today. It is the mainspring behind most human progress.

It impelled Columbus to undertake his voyage of discovery.

He sought a shorter passage to India—he found America.

The influence he exerted on the world's history is incalculable.

None of us today would dare trust ourselves to Columbus' ship.

Most of us would have trembled in Fulton's Claremont.

All of us would have denied any future to Stevenson's locomotive.

Yet we all realize today the revolutionary influence of these forces.

This distrust of the new is inherent in the human mind.

It scoffed at motor cars twenty years ago—it stammers at times over whole-heartedly accepting the truck today.

Yet the motor truck will exert a revolutionary influence over freight transportation within a

decade. As great an influence as the locomotive exerted over passenger traffic in two generations.

It is up to us to keep abreast of this big movement—to know all we can know about motor trucks.

Here are facts:

The truck is older than the pleasure car.

There was the traction engine; then the steam truck; then the gasoline or electric truck.

The traction engine was used in the eighties; the gasoline truck in the nineties.

There are trucks in use today that have been continuously in service for fifteen years.

Sampson
Strong as its name suggests

The Sampson Delivery and Freight Motors are made by the Alden Sampson M'fg. Co. — the truck division of the United States Motor Co.



Holds the safe by its own motor in one-fifth the usual time.



Hauling rolls to newspapers requires strength and promptness.



Hauling 8 tons of coal with 5-ton truck by use of trailer.

There are 2300 freight delivery motors in use in New York City today.

There are 900 in Chicago.

There are many other facts as important, as far reaching, to be learned at the truck show.

The transportation engineers who build Sampson trucks can tell you many things interesting to know.

You will find them at Space B-1, at the Coliseum, immediately at the right as you enter the building.

You will see there also the only complete line of motor

trucks exhibited at the show—for no other maker builds a complete line.

We make 1000-pound delivery motors, one, two, three, four and five-ton freight motors as well as 20 to 40-ton gas-electric road trains.

This show marks an epoch.

We won't try to tell you the advantages of the Sampson trucks.

When you know how we went about building them—know what is behind the Sampson—you will understand without being told.

Look us up—B-1 at the Coliseum, immediately on your right as you enter the building.



If you cannot visit the show, send for our catalogue which tells the Sampson story—or, better yet, ask us to send our trucks to demonstrate their ability.

We are represented in leading cities by branch houses and elsewhere by dealers.

Write to us and we will direct you to our dealer who will furnish specific information.

The Sampson factories are located at Detroit, Mich., and Pittsfield, Mass. For catalogue, address, 1414 Rhode Island Ave., Detroit, Mich.

Members A. L. A. M.

Sampson
Strong as its name suggests.



Delivering grain cross-country from Centropolis Kansas to Kansas City.



Carries 660 gallons of milk per trip—four trips per day.



BRISCOE PRODUCTS

RADIATORS
HOODS
FENDERS

TANKS
DASHES
MUFFLERS

TUBE BENDING
SHEET METAL PARTS
STAMPINGS

DIES
GALVANIZING
ENAMELING

Let us make you a proposition on your next lot of SHEET METAL PARTS. We can interest you.

BRISCOE MANUFACTURING COMPANY, Detroit, Mich.



All Styles of Motor Lamps For All Purposes

Whatever you need in a motor lamp you can suit that need in a "Solar."

Solar Lamps are the strongest made. It requires a heavy blow just to dent them.

They have the fewest outside projections, so are most stylish and easiest cleaned.

All motor car makers acknowledge their quality, but some won't put them on unless you insist.

Ask to see Solar Lamps at your dealer's.

When you buy a new car *make the bargain* "with Solars."

Our catalog shows all the styles for all uses, including combination gas and electric headlights, exclusively electric headlights, limousine lamps and side and tail lamps, combination oil and electric side and tail lamps, and combination oil and gas motor truck lamps. Write for the catalog to the nearest office.

Badger Brass Manufacturing Co.
Kenosha, Wis.

New York City

[120]

The Largest Automobile



THE CELEBRATED Brampton Chain

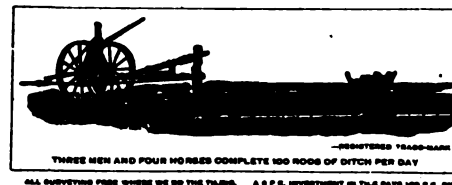
is the Strongest Chain in the World

Price the Same as Other Chains

THE Bramptou Chain

is not only used on Motor Cars, Motorcycles, Bicycles and Aeroplanes, but also on Machinery of all kinds.

**All Standard Sizes
in Stock.**



THREE MEN AND FOUR HORSES COMPLETE 100 RODS OF DITCH PER DAY
ALL SURVEYING PLOTS WHERE WE DO THE TILING. A \$ P. E. INVESTMENT IN TILE PAYS 100 P. C. BY ANNUAL TEST

H. M. FISK,

Owner of the Fisk & Co., Inc., N. Y.

Solicitor and Contractor
For Tile Draining.

Manufacturer of The Only Successful Rapid Tile Laying Machine on

Pella, Iowa Dec. 10/10/191

Chas. E. Miller, 121 Chambers Street N. Y.

Dear Sir,

I have your letter of 20th inst., stating you had shipped 3 1/2 pitch, Brampton Roller Chain. You ask what we use said chain for. I send you two Photos of Machine upon which we use said chain. Drum 22 inches diameter, Sprocket 39 inch diameter, draft 57 tons, at highest tension, the chain has run three summers without perceptible wear, and we think it a dandy.

Yours very truly,

H. M. Fisk.

We are the Sole American Agents. Catalog on request.

CHAS. E. MILLER, Manufacturer, Jobber
Exporter and Importer

Philadelphia, Pa.

Boston, Mass.

Brooklyn, N. Y.

Cleveland, O.

Hartford, Conn.

Springfield, Mass.

Supply House in America



Saves Power

Saves Wear



Saves Time

Saves Money



Miller's Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Miller Pan-American Gear Case Compound

Made in Three Densities — Light, Medium, Heavy

All have a low cold test and high melting points and retain their various consistencies at varying temperatures.

In order to convince you of the efficiency of these lubricants we are willing to make you a SPECIAL PRICE for an initial order, much lower than usually quoted on other high-grade oils and greases.

AGENTS WANTED IN UNOCCUPIED TERRITORY.

HOME OFFICE

97-103 Reade Street
and 121 Chambers Street

New York City

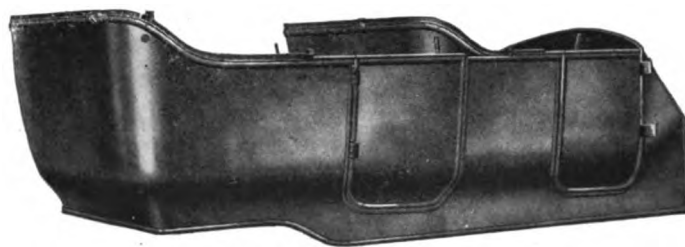
Detroit, Mich.

Buffalo, N. Y.

Atlanta, Ga.

New Orleans, La.

54th St. and Eighth Ave., New York City.



WE have completed our annual arrangements for increase of business. Our equipment in all departments is very complete. We will exhibit our

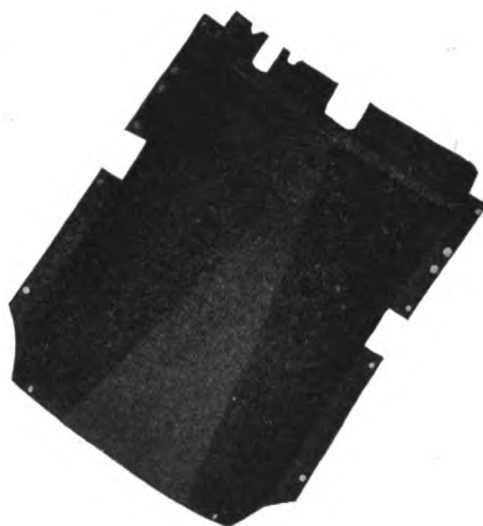
**New Channeled Steel Fender Stiffener
and the Hayes-Stanwood Running Board**

Metal Bodies

Fenders

Gasoline Tanks

Hoods



Engine Pans

**Running Board
Shields**

Forged Irons

Tool Boxes

and a **FULL LINE OF SHEET METAL PARTS** at the Chicago Show. Don't miss seeing them.



**HAYES
M'FG
CO.**

**Detroit,
Mich.**



1911

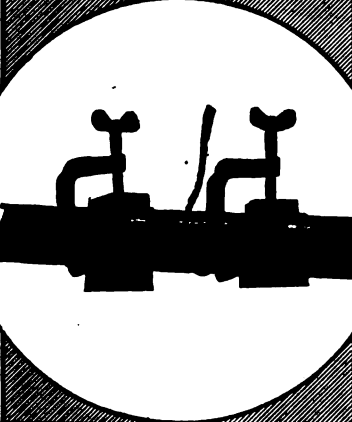
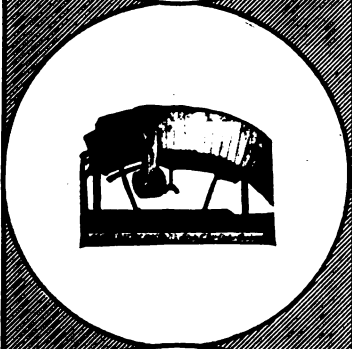
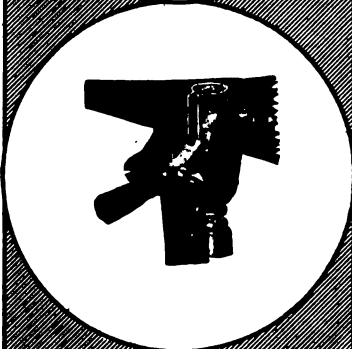
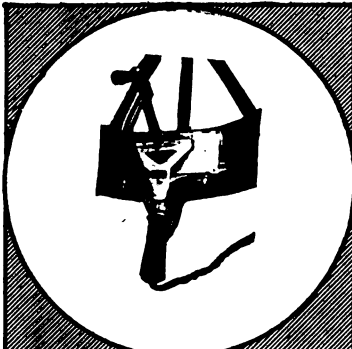
THE ONE COMPLETE

SHALER

1911

LINE OF VULCANIZERS

Mr. Jobber, you can now purchase all your vulcanizers from one firm, do away with a lot of red tape and minimize transportation expenses. We manufacture both electric and flame-heated vulcanizers—for the large garage, for the small repair shop, for the car owner; vulcanizers for use in the city or on the farm; vulcanizers for shop use or road side repairs; all kinds of vulcanizers.



Types B and D Electric Vulcanizer

These types operate from city lighting current. They are designed for use by both garages and private owners, for tube repairing and for mending cuts in casings without taking tire off the wheel. Type B has a rheostat to control the heat and will operate on both direct and alternating current. Type D has an automatic thermostat heat control and operates on either direct or alternating current as desired.

Type B, Iron.....	\$20.00
Type B, Nickel plate aluminum.....	25.00
Type D, Iron.....	12.50
Type D, Aluminum.....	15.00

Type J "Stitch-In-Time"

The Stitch-In-Time does the same work as Types B and D Electric. It is heated by an alcohol lamp and can be used by the roadside or on the farm as well as in the city. The temperature is regulated by an automatic thermostat and the machine is compact enough to carry in a tool kit.

Type J, Stitch-In-Time.....	\$10.00
-----------------------------	---------

Type C Electric Vulcanizer

This type is for use in public garages, for repairing blow-outs in casings. It fits inside the tire and brings the heat right against the new fabric, so that it is not necessary to cut away a lot of rubber and fabric to make a repair. The repair is made just as strong as desired by putting in additional layers of fabric on the inside of the tire.

Type C, for alternating current.....	\$20.00
Type C, for direct current.....	25.00

Type E "Gang" Electric Vulcanizer

This type is for use in garages that have a quantity of inner tube work. It is twenty-four inches long and is furnished with four patent clamps and four blocks for four sizes of repairs. It will vulcanize six tubes as quickly as one, or will repair a two-foot slit at one setting.

Type E, for alternating current.....	\$25.00
Type E, for direct current.....	30.00

Write at once for complete description of our line and proposition for 1911.

C. A. SHALER CO., Mfrs.

403 Fourth Street, Waupun, Wis.

Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of TIRES INFLATED TO THE RIGHT PRESSURE. He insists that this is tire economy and SAVES YOU MONEY. How do you know what pressure you have in your tires?

A Schrader Universal Tire Pressure Gauge



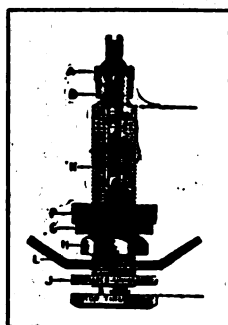
Will tell the exact pressure in your tires at any time, day or night, by simply holding this GAUGE to your valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the GAUGE can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the INDICATING SLEEVE can be pushed back into the GAUGE with your finger. No catches or snaps to operate or get out of order.

This GAUGE is of great value to the user of DEMOUNTABLE RIMS, as the SPARE WHEELS carried must always be in readiness, and in order to be so they must at all times have the tires properly inflated. This can easily be ascertained without any exertion or inconvenience, by the use of the SCHRADER UNIVERSAL TIRE PRESSURE GAUGE.

This GAUGE is 2½ inches long over all, short enough to apply to the smallest diameter of wheel, and can easily be carried in the vest pocket, or the change pocket of your trousers. It is enclosed in a leather case, keeping the gauge free from dirt and other particles accumulating in the pockets.

Price, \$1.00 each. READY for delivery NOW. GUARANTEED SIMPLE AND ABSOLUTELY ACCURATE. Can be obtained from all tire manufacturers, jobbers and the dealers, or

A. SCHRADER'S SON, Inc., 28-32 Rose St., New York City



ESTABLISHED 1844

Schrader Universal Valves

Trade-Mark Registered April 30, 1895

SIMPLE AND ABSOLUTELY AIR TIGHT, SCHRADER MOTOR TIRE VALVES, as shown in cut, are the regular equipment for G. & J. style Motor Tires, whether used on ordinary rims or demountable rims, such as Michelin or Continental Ready-Flated Tires, and are also used on Hartford Detachable, Fisk Detachable and New Goodyear Detachable Motor Tires.

Our No. 777 Motor Tire Valve is the standard for 2½-in. and 3-in. Tires, and our No. 725 Motor Tire Valve is the standard for tires larger than 3-in.

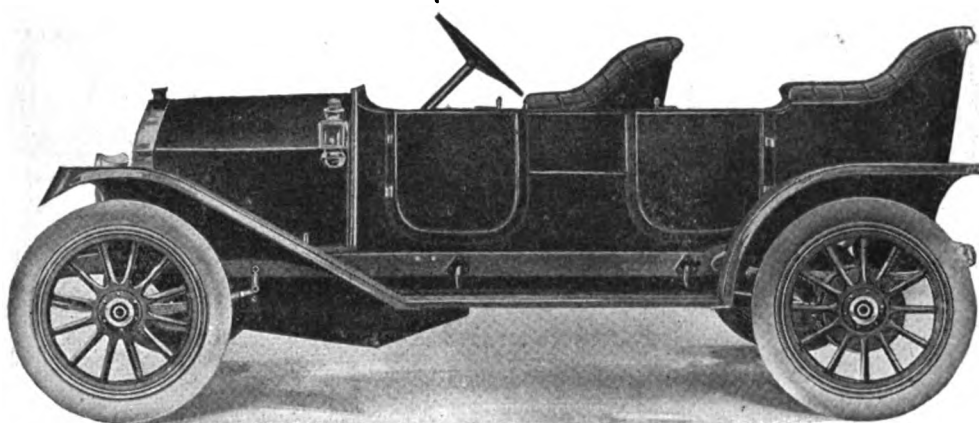
SCHRADER UNIVERSAL VALVES are used on all Bicycle tires made in this country.

These Valves and Valve Parts can be obtained from all tire manufacturers, jobbers and the dealers, or

A. SCHRADER'S SON, Inc.

28-32 Rose Street

NEW YORK CITY

Marion**"Thirty"**30 Horsepower
110-inch Wheel BaseRoadster Style,
\$1,000Torpedo Roadster,
\$1,0505-Passenger
Touring, \$1,1505-Passenger
Fore Doors, \$1,200Headlights and
Magneto Included

With 30 Horsepower—110-inch Wheel Base—\$1,200.

Marion**"Forty"**40 Horsepower
115-inch Wheel Base

Roadster Style, \$1,600

Torpedo Roadster,
\$1,6504-Passenger Close-
Coupled, \$1,6005-Passenger
Touring, \$1,6504-Passenger Coupe,
With Extra Body,
\$2,000

Limousine, \$2,500

Headlights and Bosch
Magneto Included

See the Thousand-Man Car

You will find no other car in the city so interesting as the Marion for 1911.

For these new Marion models which are now on exhibit show all the best ideas of a thousand designers. You can see all the greatest features which this industry has developed in this one composite car.

It is the product of a thousand brains.

All the Best Ideas

Eight years ago we started out to combine in one car all the best ideas that developed.

We had our own designers, our own engineers. Six of the ablest in America have worked on Marion cars. And they invented some features which no other man has excelled.

But their main duty has been to put other men's ideas to a test. They have watched every improvement, every bettered material, every new device. They have compared one with another—in road tests and contests—until they absolutely knew which was best.

These men have smothered their own pride of invention. When any man anywhere devised anything better they bought or adopted that man's idea.

The one idea has always been to have

every feature in the Marion car the very best of its kind in existence.

For eight years we have worked with that one idea. Each important feature has been compared with others over thousands of miles of road. Each has been tested in many national contests. And thousands of Marion owners have helped us make the comparisons.

It is very interesting to see the final result in the Marions for 1911.

The Men Who Helped

We gladly give public credit to the men who have helped us most.

The motor in our "Forty" is the latest Continental creation. The engine in our "Thirty" is made for us by one of our largest competitors. They ask us not to state the name.

These engines—in more than fifty thousand famous cars—have proved themselves the best engines made. No other engines have done so much to build up great reputations.

We use the Kinsey pressed steel frames, the Warner differential, the Warner steering gear. We use the Stutz transmission, the Timken bearings, the Splittorf and Bosch magnetos. And we use the Sheldon springs—the costliest springs made in America.

These things we buy because we have proved them better than anything we can make. We make in our own shops only such parts as we can make better than others.

Cutting the Cost

Every Marion feature—whether we make it or buy it—has been adopted without regard to cost. If we knew anything better at double the price we would get it.

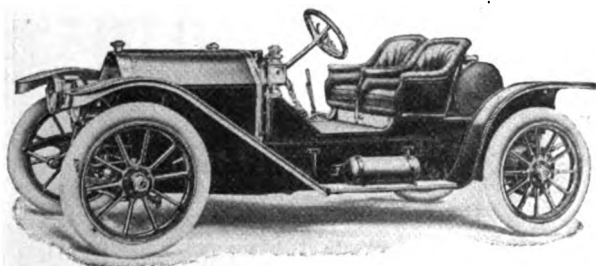
But other men have worked equally well to cut selling cost and overhead expense. We believe there is no other car where so much of the price goes into the making cost.

The 30-horsepower Marions, as a result, sell for \$1,000 to \$1,200. The wheel base is 110 inches. The price includes headlights and magneto.

The Marion "Forty" with 115-inch wheel base, sells for \$1,600 and \$1,650. Compare that with other 40-horsepower cars. The car nearest this "Forty" in style and features is selling for \$2,850.

Come and see these Thousand-Man cars. Let us explain why each device was adopted—how we proved it better than others. If you cannot come, please write for our catalog, showing all the new Marion models.

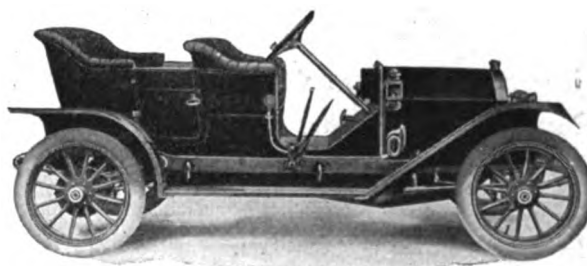
THE MARION SALES COMPANY, Indianapolis, Ind.



With 30 Horsepower—110-inch Wheel Base—\$1,000
With 40 Horsepower—115-inch Wheel Base—\$1,600

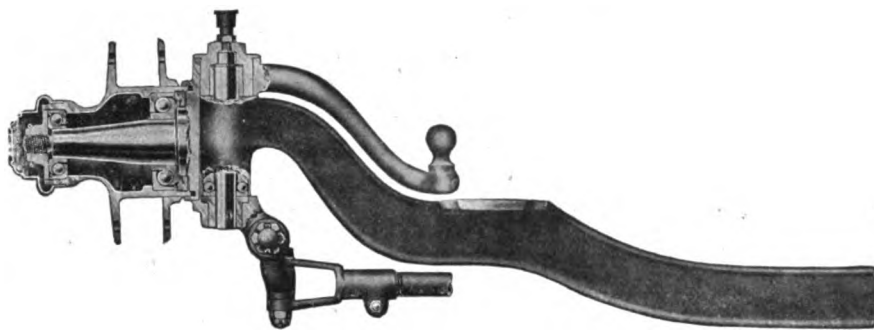
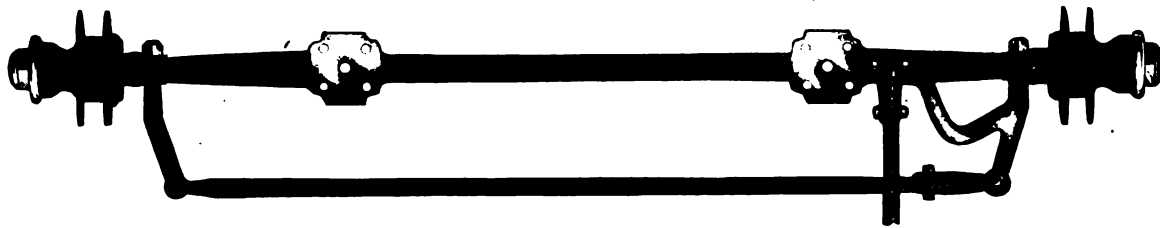
Marion

Licensed
Under
Selden
Patent



With 30 Horsepower—110-inch Wheel Base—\$1,150
With 40 Horsepower—115-inch Wheel Base—\$1,650

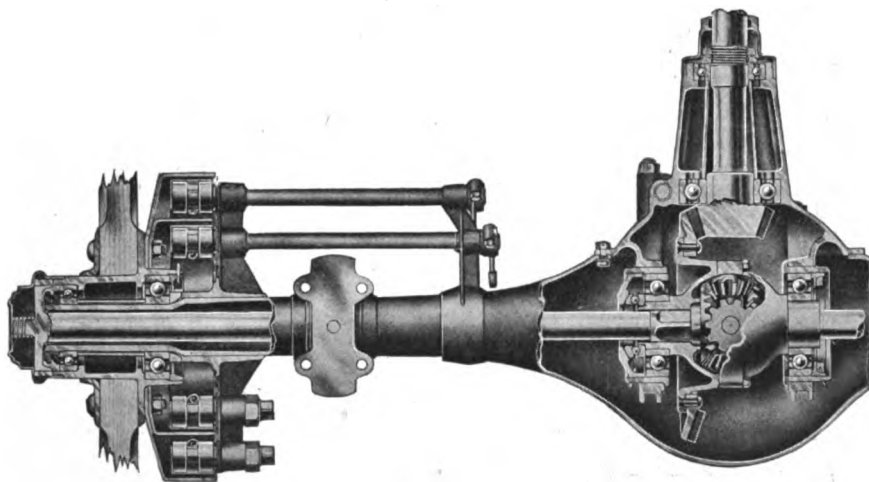
THE McCUE AXLES



Front Axles

LEMOINE AND ELLIOTT TYPES

Spring seats from 28" to 30"; drop from $\frac{7}{8}$ " to 4". Made of alloy and carbon steels, all weights.



Full Floating Rear Axle

Housings — one piece sheet steel, heat treated.

Floating axle with hub clutch forged integral. No welds or upsets.

Pinion Gear — integral with pinion shaft, made of alloy steel and carefully treated.

Bearings — imported annulars.

Drums — 4, having flange bearing surfaces and braking surfaces carefully machined — making real brakes possible.

EVERYTHING entering the construction of these axles, including workmanship, is the best obtainable. They are made for service.

When you see a car with a McCue axle it is evidence of good construction all through.

THE McCUE COMPANY

Hartford, Connecticut

We will exhibit at Chicago, Coliseum Show; and Boston, Mechanic's Pavilion.

ONLY FOUR TRUCK BUILDERS

Do Not Use TIMKEN Roller Bearings

on the commercial cars exhibited at the Madison Square Garden Show!

Commercial Cars	Number of Cars Shown	Front Wheel Bearings	Rear Wheel Bearings
Stearns	1	TIMKEN	TIMKEN
Morgan	1	TIMKEN	TIMKEN
Pierce	1	TIMKEN	TIMKEN
Waverley	2	2 TIMKEN	2 TIMKEN
Knox	3	3 TIMKEN	3 TIMKEN
Peerless	2	2 TIMKEN	2 TIMKEN
Hewitt	3	3 TIMKEN	3 TIMKEN
Autocar	10	10 TIMKEN	10 TIMKEN
Reliance	3	3 TIMKEN	3 TIMKEN
Rapid	4	4 TIMKEN	4 TIMKEN
Sampson	1	1 Ball	1 TIMKEN
Grabowsky	7	7 TIMKEN	7 TIMKEN
Lansden	5	5 TIMKEN	5 TIMKEN
Studebaker	5	5 Plain	5 Plain
White	3	3 Plain	3 Plain
Packard	7	7 Ball	7 Ball
Mack	3	3 TIMKEN	3 Ball
Alco	6	6 TIMKEN	6 TIMKEN
General Vehicle	6	6 TIMKEN	6 TIMKEN
Detroit Electric	2	2 TIMKEN	2 TIMKEN
Pope	2	2 TIMKEN	2 TIMKEN
Franklin	2	2 TIMKEN	2 TIMKEN
Reo	4	4 TIMKEN	4 TIMKEN
Overland	2	2 TIMKEN	2 TIMKEN
Brush	3	3 TIMKEN	3 Ball
Atlas	3	3 Ball	3 Ball
Randolph	3	3 TIMKEN	3 TIMKEN
McIntyre	2	2 TIMKEN	2 TIMKEN
Garford	2	2 TIMKEN	2 TIMKEN
Ward	3	3 TIMKEN	3 TIMKEN
Kissel	1	1 Plain	1 Plain
Locomobile	1	1 TIMKEN	1 TIMKEN
	2	2 TIMKEN	2 TIMKEN
	2	2 TIMKEN	2 Ball

THE TIMKEN ROLLER BEARING CO., Canton, Ohio, U. S. A.

Bosch Magneto



Victorious in Commercial Contests

In the truck and commercial vehicle reliability, endurance and economy contests of the year those trucks and vehicles equipped with Bosch Magnetos made the best showing and proved that this Ignition is the most efficient, reliable and economical.

The following list of Bosch-equipped winners is worth your attention:

Bosch-Equipped Commercial Winners

PHILADELPHIA - ATLANTIC CITY RUN

Franklin, Autocar, Garford, Frayer-Miller (Kelly), Gaggenau

NEW YORK TRUCK CONTEST

Chase, Kelly, Alden-Sampson, Brush

BOSTON COMMERCIAL CONTEST

Warren-Detroit, Franklin, Frayer-Miller, Frayer-Miller, Autocar, Mack

CHICAGO-MILWAUKEE COMMERCIAL RUN

The Bosch-Equipped Brush won in the small truck class, and the Alden-Sampson in the class of the largest vehicles.

The Following High Grade Commercial and Industrial Vehicles Use BOSCH MAGNETOS:

Avery
American La France
Alco
Alden-Sampson
American Lockport
Atlas
Autocar
Brush
Chase
Courier
Cunningham
Croxtton-Keeton
Darracq
Decauville
De Dion Bouton

Delahaye
Denniston
Franklin
Frayer-Miller
Frontenac
Gaggenau
Glyde
Garford
Hewitt
Holt
Ideal
Kissel
Knox
Loco
Metzger

Mack
Moyer
McIntyre
Mercury
Nott Fire Engine
Peerless
Penn-Unit
Pierce-Arrow
Pope-Hartford
Rapid
Randolph
Renault
Republic
Reliance
Rockwell

Rumely
Sanbert
Sayers-Scovill
Seagrave
Schlosser
Spoerer
Stearns
Sternberg
Sultan
Universal
Warren-Detroit
White
Wood
Willys-Overland
Wilcox

See Our Exhibits at Chicago and Boston Shows

BOSCH MAGNETO COMPANY

New York

Chicago

Detroit

San Francisco

MORE CARS
are exhibited on
Diamond
TIRES

In Chicago's Big Show

than on highest competing make by

53% MARGIN

The great National Automobile Show has never in its history failed to reveal a conspicuous national preference for Diamond Tires. This year—

100 Cars are exhibited on DIAMOND Tires, representing 45 leading car builders.

65 Cars are shown on second highest make, representing 36 car builders.

48 Cars are shown on third highest make, representing 23 car builders.

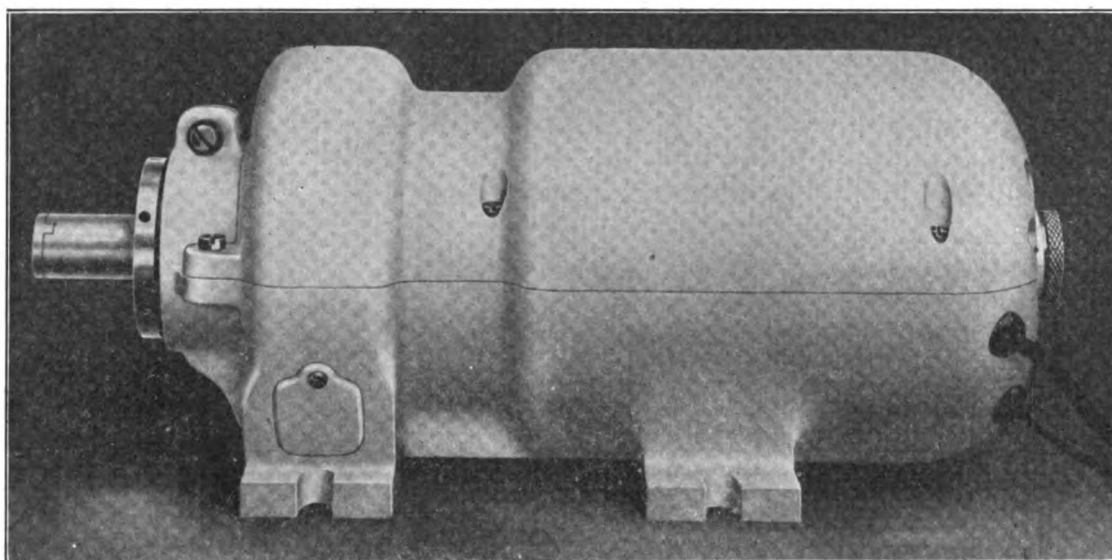
NOTICE THIS

In both the New York Shows, Madison Square Garden and Grand Central Palace, Diamond Tires equipped more cars than any other make.

For 1911 Diamond Tires Are Still Further Improved

THE DIAMOND RUBBER CO., Akron, Ohio

Light Your Lamps and Charge Your Batteries
WITH THE
GRAY & DAVIS
Dynamo System



DYNAMO SYSTEM TYPE "C"
One-half life size. Weight complete, as shown, 19 1-2 lbs.

The Gray & Davis System for Electric Lighting of Automobiles is a distinct advancement in the perfection of the motor car. It does away with lighting difficulties and troubles. It represents as great a convenience as electric lights in your home. This system does what no other dynamo system can do. Shunt Wound when changing batteries. Compound Wound when lighting lamps.

Here are a few features:

- 1—Favors the battery by putting in a tapered charge.
- 2—Cooled by forced draught (latest European practice). This enables us to get efficiency from a small machine that will not heat up.
- 3—Favors the lamps (an exclusive feature) and runs one 2 c. p. lamp or all five lamps without batteries being connected.
- 4—Compounds when lamps are on. Talking

with a skeptic, we made the remark that our Dynamo being a simpler machine than the magneto on his car, it was more reliable. "True, perhaps," he said, "but if my magneto gives out I can get home on the battery." So can we; if dynamo gives out we can get home on the battery also. With our system you can run lamps on battery or dynamo, just as you choose. You have TWO SOURCES of supply.

Get the Gray & Davis Dynamo System for your car. Also order complete electric lamp equipment—be up-to-the-minute—just a little ahead. You'll be interested—why not let us send you our catalog describing both the Dynamo and our full line of lamps—electric and gas?

 **GRAY & DAVIS,** Manufacturers of the famous
GRAY & DAVIS Lamps **Amesbury, Mass.**

GIBNEY Eleck-Trick Vulcanizer

This instrument heals small tire injuries before they become large and serious.

Its chief function is to keep good tires in perfect condition at all times. It is also equally efficient as a repairer of tires that are in bad shape through hard wear and neglect.

Note the illustrations: They show that the Gibney Eleck-Trick Vulcanizer is always ready. It is easy to operate, quick in its action—sure in its results.

Given an electric light connection (either alternating or direct current), your tool kit (which comes with the vulcanizer) and you are ready to heal little tire troubles, before they become big tire troubles—

And this at a cost of \$15.

Thirty-three per cent. of tire depreciation is due to the common practice of traveling on tires that contract small abrasions, bruises and cuts, which grow worse at a ruinous rate.

This money wasting experience is universal and paid for by hundreds of thousands of dollars yearly—an unnecessary expenditure, and one in which YOU, perhaps, participate.

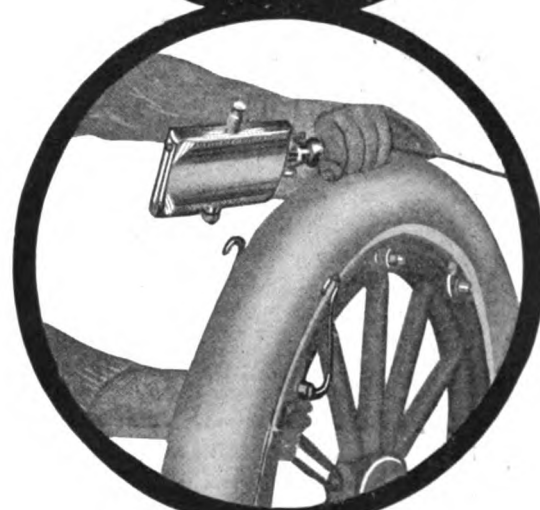
The Gibney Eleck-Trick Vulcanizer in your garage or in your car while on tour, will give you tire efficiency of from 5,000 miles up with a tire which in common usage, would play out at 3,500 miles.

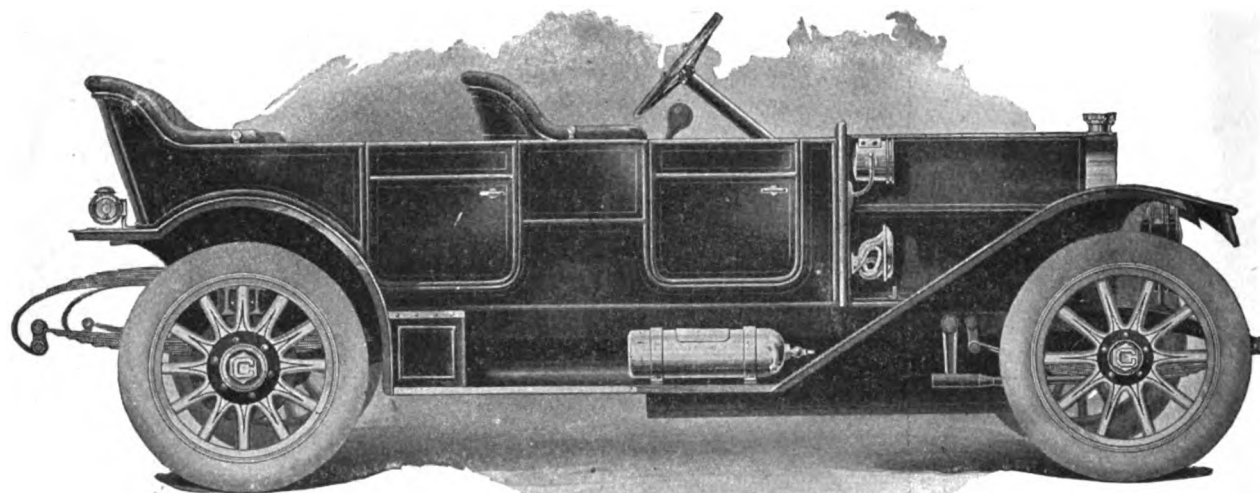
Isn't this worth considering?

Interested? You'll be even more interested when you see our literature embodying facts and figures which offer convincing proof that this vulcanizer will repair your tires 100 per cent. more conveniently, economically and quicker than any other method in sight, and positively increase your tire mileage 33 1-3 per cent. Let us tell you the "Why and the How" of it. A postal will bring you full details. Write for them.

James L. Gibney & Bro.
217 North Broad St., Philadelphia

248-52 West 54th Street, New York





Model H 5 Passenger Fore Door Touring Car—1750

COLBY

Built to Compete with \$3000 Cars

We wish to extend our thanks to the experts and others who have been so pronounced in proclaiming the Colby "40" the best motor car ever put on the market selling for less than \$2500.

It easily develops 5 to 50 miles an hour without overworking the motor, or causing any unpleasant vibration of the car.

The Colby is designed for comfort, as well as appearance, having the grace and beauty only found in high priced cars.

In our construction, we have used only the very best workmanship and material throughout. A glance at our specifications will prove it. Compare them with cars selling for three thousand and more.

We would be pleased to have the most skeptical call at our exhibit and be convinced.

SPECIFICATIONS

Body: Standard touring straight line. Seating capacity, five. Fore-doors. Motor: Four Cylinder—H. P., 35-40. Bore, $4\frac{1}{4}$; stroke, $5\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four. Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case. Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system. Carburation: Carburetor—special fuel feed—gravity. Clutch: Type—multiple disc. Friction surfaces—steel to steel. Gearset: Selective—located amidship. Three speeds forward. Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating. Bearings: Crankshaft—three large, Plain. Camshaft—three, plain. Clutch

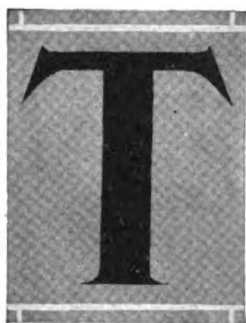
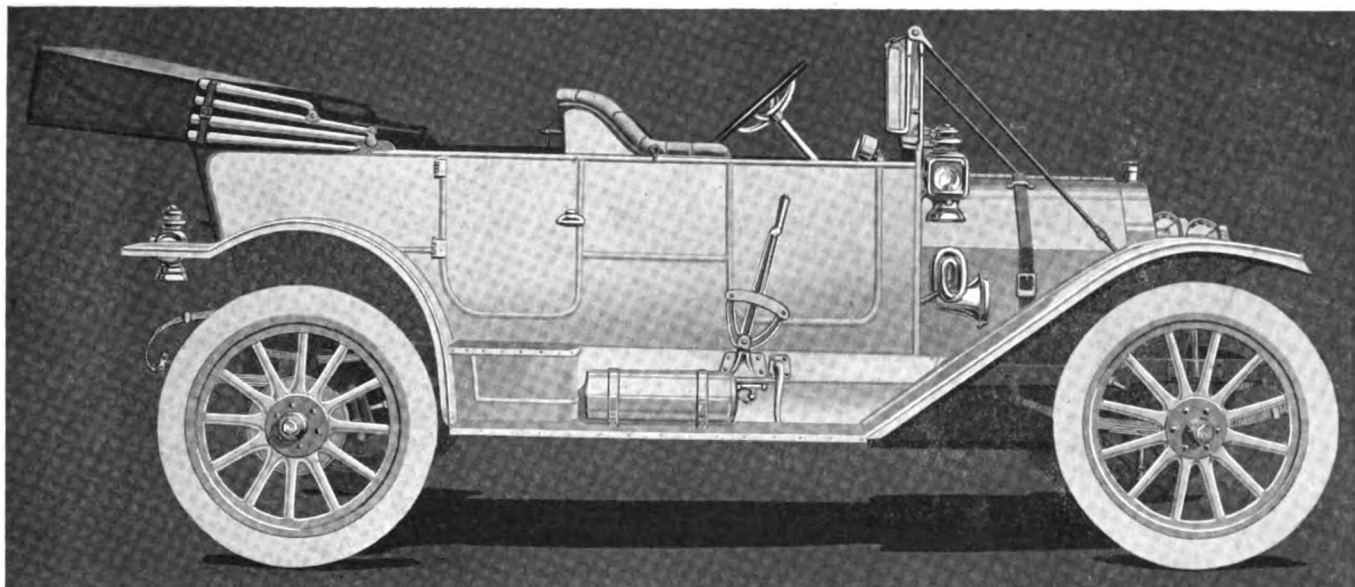
—spindle, plain. Clutch, thrust, ball. Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball. Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white bronze. Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36 x 4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type.

Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel. Demountable Rims: Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra. Control: Hand levers on steering wheel and foot accelerator. Price: \$1,750, f. o. b. Mason City.

Watch for us in the Coliseum basement—Booth No. 3—at Chicago from January 28 to February 11.

COLBY MOTOR CAR COMPANY, Mason City, Iowa

New York Representative—EMPIRE CITY AUTOMOBILE CO., 1800 Broadway.



HE experience of the Automobile Shows, and the daily results in our dealers' sales-rooms, prove this:

The people who are most interested in Haynes Cars—the majority of Haynes buyers today—are those who had previously intended to buy costlier cars.

They were convinced that an automobile of the quality, class and efficiency they desired could only be had by paying \$3000 to \$5000.

The Haynes Car, at \$2100 complete, convinced them differently.

They recognized in it the fulfillment of their most exacting requirements—true automobile value.

Haynes sales are increasing enormously to just this kind of buyers. Buyers of intelligence and keen judgment of automobile values, who know the prestige of the Haynes name and the quality of a car built upon the broad experience of the oldest automobile manufacturers in America.

A big thought here for the far-sighted agent who watches the trend of demand, and is guided by it.

The Haynes Exhibit, Space H-2, main floor, is a center of interest this week at the Coliseum Show in Chicago

Haynes Automobile Company
Station C

Kokomo, Indiana

HAYNES

The Sensation

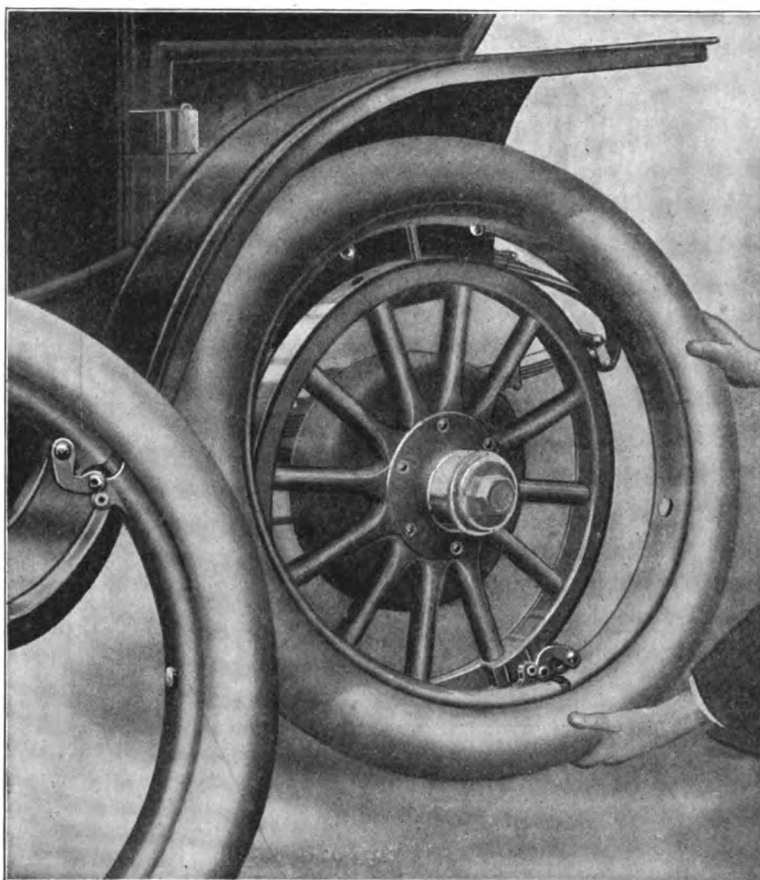
of the Madison Square Garden Automobile Show in
Detachable-Demountable Rims was the

"BAKER" UNIVERSAL DEMOUNTABLE

Absolutely Without Exception the **Neatest Simplest Strongest** **Lightest Fastest BEST** of ALL Detachable-Demountable Automobile Rims

For Any Type of Tire.

These are strong words, but they are backed by strong facts. Let us show you.



This picture shows the method of making a tire change on the road when the car is equipped with "BAKER" UNIVERSAL Demountable rims.

There are NO loose parts and the change can be made quicker and easier than the motor can be cranked.

Not an experiment, but the logical result of years of experience.

Manufactured and Sold by **W. K. PRUDDEN & COMPANY, Lansing, Mich.,** Pioneer Wheel and Rim Makers

Largest exclusive manufacturers of complete wheels in the United States

HUBS—WOODWORK—RIMS

Write for Detailed Information

W. K. PRUDDEN & COMPANY, 701 May St., Lansing, Mich.

This Contract Closes Big Commercial Vehicle Sales



The Waverley Company is the first manufacturer of electric commercial vehicles to introduce a maintenance contract.

Waverley Agents are the only agents that profit by this kind of arrangement.

The Waverley Maintenance Contract provides that the cost of up-keep of a Waverley Commercial Vehicle shall not exceed a certain amount (varying with the size of the truck).

That amount is set down in each contract in plain figures. It takes away all uncertainty from the buyer's mind.

It is this **uncertainty** that has kept hundreds of business houses from adopting electric delivery. It no longer exists for buyers of the Waverley. The market is now wide open for the agent who sees the enormous possibilities.

When we receive an inquiry from a possible truck user we invite him to give us the necessary figures about his business on which to base an accurate estimate as to the cost to him of running a Waverley Electric truck.

If he cannot use a truck economically we tell him so. We prefer to lose a sale to making one dissatisfied owner. That's why there are no dissatisfied owners of Waverley trucks.

If the Waverley would save him money over his present method of delivery and transportation **WE ARRANGE WITH OUR LOCAL DEALER** to sign the Maintenance Contract.

Contrast this definite contract with the vague generalities in which claims are so often made for motor trucks!

It is already making sales. In almost every community in the United States, there are business men who would be glad to figure on an electric commercial vehicle on this basis.

Live agents can close many of these prospects. If you are interested, write us.

THE WAVERLEY COMPANY

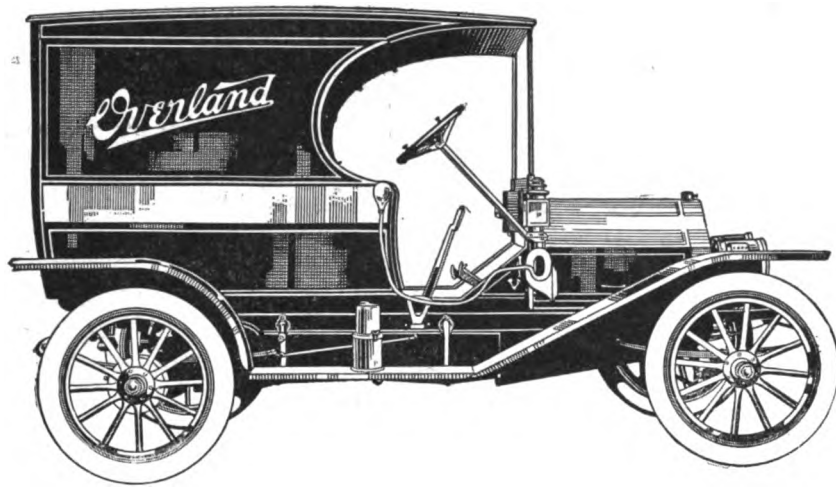
Factory and Main Office: 197 South East Street, INDIANAPOLIS, IND.

Branch Office: 2005 Michigan Avenue, CHICAGO, ILL.

SEE OUR EXHIBIT AT THE SHOW

CHICAGO (First Regiment Armory - Space A 2 - First Week
(Coliseum - Section B - Second Week)





OVERLAND LIGHT DELIVERY WAGON

Horsepower 25
Wheelbase 102 inches

Made with the enclosed
and open express bodies.

Price \$1000

Overland Delivery Cars—Winners of the Government Test

For two years, Overland Delivery Cars—like the ones pictured here—have been used in the Government Mail Service in Indianapolis.

Each one has done the work of three horse-drawn vehicles. Each has covered from 60 to 75 miles daily—winter and summer, rain and snow—without missing a single trip. They have done this for two years and are doing it still.

Recently these cars won the Government test for automobile mail wagons, conducted at Philadelphia. There were entered in this competition practically all other makes of similar automobiles, and the Overland won against all of them.

Of all the myriad uses to which these cars are put the Mail Wagon test is the most severe.

Mail Wagons must make their regular trips, every day of the year, regardless of weather. There have been times in Indianapolis when the snow put a stop to all other traffic, but the Overland Mail Cars made their trips.

Mail wagons must be dependable—must always keep running—for the mails cannot be delayed.

They must cover from 60 to 75 miles daily, making innumerable stops.

They must be simple, so any man can operate them. They must be easy to care for, as the operators are usually novices. They must be practically trouble-proof.

Overland Delivery Cars, for two years, have met all these requirements. They have won against all competition in the Government Mail Wagon test. The cars which have done this are the best possible cars for any delivery purpose.

There are thousands of storekeepers and others who would be using these cars if they knew the facts.

A car which enables one man to do the work of three men and three horse-drawn vehicles is bound to be an economy.

We want to tell you the facts—to show you the cars—to demonstrate what you can do with them. Send for our commercial booklet today.

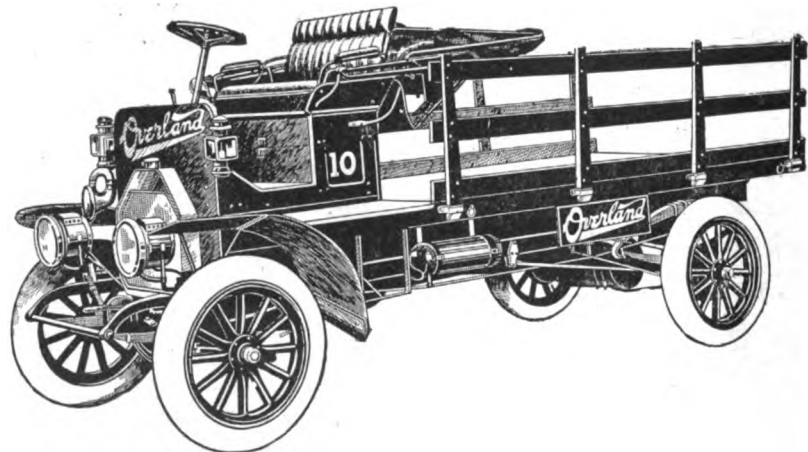
THE WILLYS-OVERLAND COMPANY, Toledo, Ohio, U. S. A.

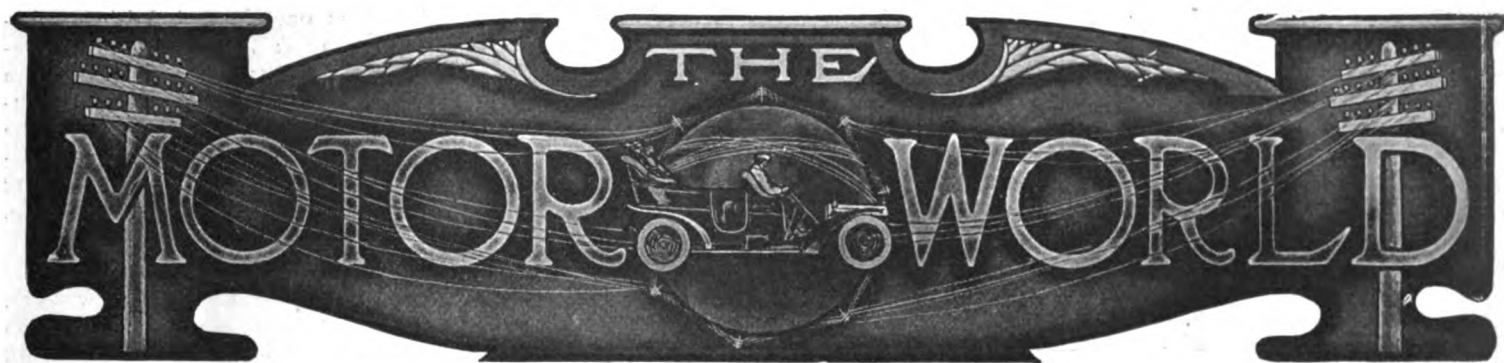
OVERLAND ONE TON TRUCK

Horsepower 40
Wheelbase 120 inches

Maximum speed 40
miles per hour.

Price \$1500



**STUDEBAKER WITH \$45,000,000**

Long Pending Merger of Carriage and Automobile Properties Finally is Consummated—New Corporation Takes Held—Foreign Capital Invested.

Negotiations looking toward a complete amalgamation of the several Studebaker interests, carriage, wagon and automobile, which have been in progress for many months, finally have come to a head, announcement being made yesterday that for the purpose of the merger there will be formed a new company to be styled The Studebaker Corporation, which will be capitalized at \$45,000,000, of which \$15,000,000 will be 7 per cent. cumulative preferred stock and \$30,000,000 common. The new corporation will take over the enormous Studebaker carriage and wagon works in South Bend, Ind., and the E-M-F automobile plant in Detroit, of which the Studebaker interests acquired full control about one year ago after a tremendous and memorable upheaval.

Of the \$15,000,000 preferred stock in the new Studebaker Corporation, \$13,500,000 worth has been purchased by Kleinwort Sons & Co., of London, in association with Goldman, Sachs & Co. and Lehman Bros., of New York.

It long since ceased to be a state secret that the real control of the Studebaker and E-M-F companies rested with J. Pierpont Morgan & Co., of New York, who held bonds to the amount of several millions, which had been placed on the properties and which styled "Studebaker 5's" have been traded in the New York curb market. The arrangement just consummated requires the retirement of these bonded obligations, thereby relieving Morgan & Co. of any burden which they may have imposed. This retirement will make the preferred stock a first lien on the property of the new corporation and it is understood that provision also has been made whereby

no prior obligation can be contracted without the consent of the preferred shareholders; likewise, it is provided that no dividends be paid on the common stock until a certain fixed amount of working capital has been accumulated, of which the net profits from the sale of \$13,500,000 preferred stock to the New York and London banking houses is expected to provide a good foundation.

Despite these requirements, it is stated that the control of the Studebaker corporation will remain with the Studebaker interests because of their possession of the common stock which they will retain, but it is naively admitted that the bankers will have no small voice in the management and direction of affairs. Goldman, Sachs & Co., who were prominent in the consummation of the transaction, is the same firm which so successfully handled the enormous Sears-Roebuck floatation, much of which, as in the present instance, was taken by bankers abroad.

Metzger Elected President of N. A. A. M.

At the annual meeting of the National Association of Automobile Manufacturers, which occurred yesterday (Wednesday) in the First Regiment Armory, Chicago, W. E. Metzger, of the Metzger Motor Car Co., Detroit, the first vice-president, was elevated to the presidency. He succeeds L. H. Kittredge, of Cleveland. The other officers chosen are as follows: First vice-president, Benjamin Briscoe, United States Motor Co., New York; second vice-president, H. O. Smith, Premier Motor Mfg. Co., Indianapolis; third vice-president, S. T. Davis, Jr., Locomobile Co. of America, Bridgeport, Conn.; secretary, Roy D. Chapin, Hudson Motor Car Co., Detroit; treasurer, W. R. Innes, Studebaker Automobile Co., New York. Previously, Mr. Briscoe was third vice-president and Mr. Smith secretary. Mr. Innes was the only official who was returned to his former post. Mr. Kittredge, the president, and C. C. Hildebrand, former second vice-president, were the two men relieved of official harness.

A. L. A. M. WILL QUIT

Selden Decision Forces Association to Drop Name and Dissolve—Members Now in Chicago Forming a Corporation on Modified Lines.

The Association of Licensed Automobile Manufacturers and its offspring, the Association Patents Co., are to follow the Selden patent off the stage, and the names, at least, soon are to become merely historic trade memories.

The way for its dissolution is being prepared at a meeting of the association which is being held today in the Congress Hotel Annex in Chicago. The fact, however, that the association which lived such a useful and conspicuous life soon will end its existence does not mean that those who compose its membership will cease to be associated, as, concurrent with the dissolution proceedings, plans for another organization are being brought to a head. The new organization, however, will not take the form of an association, but will be a corporation operating under a company title.

When, early last month, the United States Circuit Court of Appeals rendered the decision invalidating the Selden patent, the Association of Licensed Automobile Manufacturers promptly convened and discussed the situation. After the meeting a diplomatically phrased announcement was made that the organization would be continued and would prosecute its work in the several other fields of endeavor in which it had been engaged. It is possible that when this announcement was made those who made it believed what it said. However that may have been, legal opinion convinced the officers of the organization that it no longer had the right to include the term "Licensed" in its title, and that unless it was possessed of such patent or patents as would permit of the issuance

of licenses to all members, the term must be eliminated.

As it was found that the association owned no patents which would permit of this procedure, a committee, with C. C. Hanch, treasurer of the Nordyke & Marmion Co., as chairman, was appointed to formulate plans for a new organization which would keep the members together and working in harmony for the common good, the desire for which had been expressed by practically all members of the A. L. A. M. The result of this committee's considerations were outlined in a prospectus which later was circulated, and which generally was signed, and it is this plan which is being considered at the meeting in Chicago today.

In brief, it proposes the formation of a new corporation, organized with nominal capital under the laws of New York, the stockholders of which shall be limited to one share each, the control of the company to be vested in a board of directors of seven members. The purchase and operation of patents is included in the tentative purposes of the proposed new corporation, but one of those in position to know declares positively that the purchase of no particular patent is in view. In fact, about the only opposition that has been manifested to the proposed plan has been based on the assumption that a patent or patents would form the foundation of the new corporation, although there have been those who also have expressed the belief that the board of directors should consist of more than seven members. It is not thought, however, that there will be much trouble experienced in meeting these or any other objections which may arise.

Several names for the new corporation have been suggested, but none has been definitely selected. One desire that has been expressed is that the name might be such that will permit the continued use of at least the initials "A. L. A. M." At any rate, it is practically certain that the new organization will operate under a corporate title and not as an association, the Association of Licensed Automobile Manufacturers itself never having been incorporated.

The Association Patents Co., the offspring of the A. L. A. M., which will go out of existence when the parent body is dissolved, is an incorporated company, but its charter, it is stated, is not of the sort to render its continuance desirable or to allow the A. L. A. M. to be merged with it. Although an impression has existed that the Patents company in some way controlled the several hundred patents of the various members comprising the A. L. A. M., such is not the case. It at one time owned several minor patents, all of which have been disposed of, and it still holds certain patent rights which permit of the issuance of shop licenses on favorable terms to the various members of the parent or-

ganization. The Dyer transmission patent and several others are included in the latter category.

Only recently the Patents company sent out letters and blank contracts to some of the newer members of the organization, the contracts calling for the payment of several hundred dollars for certain shop rights. Although all of the old members long ago received such documents, their receipt by the more recent recruits appears to have created a wrong impression and to have aroused some resentment. As a matter of fact, however, it is purely optional whether or no the members take advantage of the shop licenses which are offered them. The Patents company merely placed them in the way of avoiding possible litigation, and affording this form of insurance for a nominal sum, and on the best terms possible, really has constituted the chief work the Association Patents Co. has performed for the Association of Licensed Automobile Manufacturers. However, as stated, the Patents company, like the A. L. A. M., will go out of existence, but it seems probable that the new corporation, when it is formed, will include an enlargement of the Patents company's work.

Changes Among Prominent Tradesmen.

The Lozier Motor Co. is about to open a branch in Cleveland, Ohio. It will be in charge of W. H. Kirkpatrick, one of the trade veterans and once a well-known Dunlop tire missionary.

F. H. Deal has been appointed purchasing agent of the Ford Motor Co., of Detroit. Previously he was connected with the company's manufacturing department, and succeeds to the vacancy created by the resignation of W. G. Morley.

Joseph Lowe, who some time since was connected with the sales department of the Motor Car Equipment Co., of New York, has been elected vice-president of the Emil Grossman Co., of New York. S. S. Waldman, who at one time also was connected with the Equipment company, likewise has engaged with the Grossman company in the capacity of purchasing agent.

George A. Horner, general manager of the Rapid Motor Vehicle Co., of Pontiac, Mich., and W. A. Voss, his assistant, have resigned their positions, following a visit to Pontiac of W. J. Mead, one of the directors of the General Motors Co., of which the Rapid company is a part. It is understood that an Eastern man probably will be selected to manage the Pontiac company which, meanwhile, is in charge of F. C. Frank, the factory manager.

George C. Hubbs has been appointed advertising manager of the United States Tire Co., the new organization which has taken over the sale of the Hartford, Morgan & Wright, G & J and Continental tires. He will make his headquarters in New York.

Hubbs was at one time advertising manager for Morgan & Wright, but during recent years has been connected with a prominent advertising agency. His assistants in the United States Tire Co. will be W. O. Seelye, Morgan & Wright's advertising manager, and A. L. Risley, advertising manager of the Continental Caoutchouc Co.

Grossman Gets Back Red-Head Plug.

The Emil Grossman Co., of New York, which in September last turned over its hydraulic windshield and Red-head spark plug business to the Eagle Co., of Newark, N. J., which manufactured those articles, has reacquired the spark plug interests and will renew its sale under the Grossman name. The windshield business, however, remains with the Eagle Co. Incidentally, the Grossman company yesterday removed from West 58th street to Motor Hall, 248-250 West 54th street, to which address the National Sales Corporation, of which Grossman is president, also has removed.

Mora Forms Truck Company in Cleveland.

S. H. Mora, who was president of the now bankrupt Mora Co., of Newark, N. Y., has gone West and formed the Mora Power Wagon Co., in Cleveland, Ohio. It has been incorporated with \$750,000 capital stock, under the laws of the State of Ohio, Millard H. Nason, Robert P. Abbey, Thomas S. Dunlap, A. T. Hatch and H. A. Mullen, are named as incorporators. The company intends to manufacture medium powered motor trucks and delivery wagons.

Ford Hints at a Price Advance.

Although it is only about two months since the Ford Motor Co. reduced the price of its 1911 models from \$950 to \$780 and \$900 to \$680 respectively, the company has issued a broad intimation that these prices are likely to be increased by March 1. The information is contained in a circular issued to the Ford agents, which advises them not to sell at or guarantee present prices after the date named. No suggestion as to the amount of the anticipated increase has been let fall.

Gear Makers Sue the McIntyre Co.

Suit was filed on Monday last, 30th ult., in the United States Court in Indianapolis by the Boston Gear Works, of Boston, Mass., asking judgment for \$20,000 against the W. H. McIntyre Co., of Auburn, Ind., makers of the McIntyre car. The Boston company alleged that the McIntyre company owes it \$14,554.50 and interest, for gears and other material.

Republic Raises Capital to \$4,000,000.

The Republic Rubber Co., of Youngstown, Ohio, has increased its capital stock from \$2,500,000 to \$4,000,000. The new issue will be preferred shares, and the revenue will be employed in extending the business.

NEW OFFER FOR THOMAS BUSINESS

New York Bankers Submit Proposal Calling for Formation of New Company—Particulars of the Plan.

The failure of the negotiations with the "three experienced automobile manufacturers" who, in December last, proposed to take over and operate the E. R. Thomas Motor Co., of Buffalo, N. Y., who offered to purchase \$430,000 worth of the company's first preferred stock if given all of the common stock, did not discourage the hard-working creditors' committee, headed by W. H. Crosby, which so unremittingly has applied itself to the difficult task of straightening out the much-involved affairs of the Thomas company.

As the result of these long continued efforts, another proposal has been submitted to the creditors. It takes the form of an offer from a New York banking firm, Eugene Meyer, Jr., & Co. to organize a new company which will acquire the Thomas business, assets and good will, excepting the real estate, buildings and machinery and a claim against the Thomas Motor Cab Co., paying therefor 20 per cent. and giving three notes for the remaining 80 per cent., the last one payable August 1, 1912. The new corporation, if formed, will have preferred 7 per cent. shares to the value of \$400,000, paid in, and common stock not to exceed \$2,000,000.

The real estate and other reserved property will be conveyed to trustees for the account of E. R. Thomas, personally, at a valuation of \$390,000, in consideration of his having paid \$600,000 due to banks, the balance of the indebtedness, \$210,000, to be paid in 6 per cent. notes of the new company, one-half payable February 15, 1913, and the other half one year later. The property, however, will be held by the trustees until all the notes given creditors have been liquidated. To Mr. Thomas there also will be assigned the claim of about \$285,000 against the Thomas Motors Cab Co. For the property conveyed to the trustees, the new company will pay an annual rental of \$23,400 for a period of five years, and it will also be given an option to purchase it for \$390,000.

Excepting for such materials as were actually in process of manufacture or were ready for delivery on January 27, and for such cars on which cash deposits have been paid, all outstanding contracts with creditors will be canceled; the new company, however, will have the option of assuming such contracts for material as it may desire to assume.

To be consummated, the Meyer proposal must be accepted or rejected by 95 per cent. of the Thomas creditors within five days from January 30. The New York

bankers are, of course, acting for other parties, whose identity has not been disclosed. Rumor, however, locates them in Detroit, where they already are engaged in automobile manufacture.

Detroit Made General Motors' President.

At a meeting of the directors of the General Motors Co. last week, Thomas Neal, of Detroit, was elected president to succeed James J. Storrow. At the same meeting James T. Shaw, of Boston, was chosen treasurer, and C. H. McGee, of St. Louis, was appointed controller.

The change in the presidency of the big holding company is in no sense a surprise, however, as at the time Storrow was elected, some two months since, it was made known that he would retire as soon as a suitable successor could be found. Storrow is of the banking and brokerage firm of Lee, Higginson & Co., of Boston, and he was one of the representatives of the financial interests which advanced the \$15,000,000 loan which relieved the General Motors Co. when danger threatened.

Mr. Neal, the new president, is secretary of the Acme White Lead & Color Works, of Detroit, and is one of the four Detroit directors who were chosen when the banking interests assumed direction. Mr. Shaw, the new treasurer, is of the firm of J. S. Lapham & Co., of Detroit. He succeeds C. K. Hathaway, of New York.

Percy Ford in Hands of Creditors.

Having over-extended itself, the Percy Ford Co., doing a jobbing business at 226 Columbus avenue, Boston, and maintaining a retail branch in that city at 84 Massachusetts avenue, has been placed in the hands of its creditors, who have appointed a committee of three, Louis G. Duquet, M. J. Martin and James E. Ryder, to take over and with full power manage the business until November 1st next, to which date extensions have been granted. The company has assets of \$114,741.44 and book liabilities of \$79,319.81, plus capital of \$1,000 and surplus of \$34,420.53. Ford also owns an interest in the Warren Auto Supply Co., of Cambridge, Mass., which he has transferred to his creditors.

Philadelphians Purchase Mora Property.

According to Philadelphia reports, Frank Toomey & Co., of that city, have purchased the plant of the bankrupt Mora company, of Newark, N. Y., and have removed it to the Quaker City, where the manufacture of the Mora car will be continued. Toomey & Co. maintain sales rooms at 141 North Broad street, where they have been selling Mora cars at "sacrifice prices."

Walker Heads Toward the Golden Gate.

Wilbur C. Walker, sales manager of the Pope Mfg. Co., left last week for a visit to the Pacific Coast; he will be absent for about four weeks.

REMY PLANT SOLD FOR LARGE SUM

Purchased by Indianapolis Men Representing Prest-O-Lite Interests—Ignition and Lighting System Furthers Sale.

Interests represented by Stoughton A. Fletcher, president of the Fletcher American National Bank, of Indianapolis, late last week completed the purchase of the Remy Electric Co., of Anderson, Ind. According to reports the price paid for the property approximates \$1,000,000, but Mr. Fletcher is quoted as saying that this sum is wide of the real mark. When questioned by a Motor World man the Remy brothers, Frank and P. B., while admitting the sale, declined to give the names of the purchasers or the price which the latter had paid.

Interest in the transaction is heightened by the fact that the Remys have evolved a combination ignition and illuminating device which will fit the base of any engine. It was known that the Remys were at work on such a combination system, but it was carefully guarded, and although the device was brought to the Chicago show, only a favored few were permitted to see it.

Despite the fact that the identity of the purchasers is shrouded in mystery, a report which appears to have some foundation connects the principals of the Prest-O-Lite Co. with the transaction. It is admitted that these principals, Carl G. Fisher and James A. Allison, were called into the conference which resulted in the purchase of the Remy property, but it is declared that their presence was desired merely in order to secure their opinion of the new lighting system. Messrs. Fisher and Allison deny their reported connection with the deal, but the fact that an electric lighting system would most affect their interests and render them about the last persons to be called into a conference for a disinterested opinion on an invention rivaling their own, and one which would cut heavily into their profits, makes it appear that their denials are of a diplomatic nature. They probably are looking into the future and preparing for it.

The Remy brothers will not be entirely divorced from their company, for, although they will retire from active participation in its management, they will retain a small minority stock interest and, it is stated, will collect a royalty on all of the new combination devices which are produced.

The Remys are credited with being in the millionaire class, all of their money having been accumulated within the past five years. According to apparently authentic reports current in their home town, the Remy Electric Co. last year earned profits amounting to 1,150 per cent. These

same stories add that two residents of Anderson, who each originally invested \$1,000 in the company, drew out last year with dividends amounting to \$80,000. The Remys themselves are credited with owning 80 per cent. of the stock. The General Motors Co. once sought to buy the Remy plant but as it offered chiefly stock certificates, the Remys respectfully declined.

The new combination system which the Remys have evolved consists of a specially constructed magneto, which is a modification of the present Remy ignition instrument, a coil box and storage battery. For ignition purposes the low-tension current generated in the armature is "stepped up" by the coil, the high tension being led to the distributor of the magneto to be directed to the cylinders in the usual way. For starting purposes a vibrator is provided in the coil box, which is put in action when the kick switch is turned to the starting position. As soon as the motor is running the switch is thrown over to the regular running position, when the magneto begins to supply the current which is interrupted at the circuit breaker.

The radical feature of the system is that as soon as the engine speed is reduced to a low rate, current is supplied by the battery instead of the magneto. But the magneto is so constructed that at such times it delivers a current of sufficient voltage to prevent the battery from discharging into it. When the battery is in service the ignition current is interrupted and distributed by the magneto exactly in the same way that the magneto current is ordinarily. When the engine speed again is increased, the magneto automatically resumes the load and the battery is recharged. Although the method of regulation of the magneto is not disclosed, it is stated that it delivers a practically constant current regardless of the speed of the engine, above the very lowest speeds.

The primary current from the magneto is used directly for lighting, and when the engine is stopped the battery comes into action automatically to supply current for illuminating. The usual combination of head, dash and tail lamps is provided for. To enable the operator to determine the condition of the battery, an indicator is mounted on the face of the coil box which is put into action when a button is pressed, and which, by the vertical travel of a pointer between two lines which indicate charge and discharge, respectively, shows whether the battery requires current from the magneto. A special switch is employed to control the charging operation.

The magneto itself, which has the advantage of a 70 degree timing range, differs but slightly from the standard ignition type either in weight or size. It may be installed on any engine in place of an ordinary magneto, while an adjustable base renders it adaptable to a variety of mountings.

SHAFT DRIVE PATENT BOBS UP

Renault's Alleged Basic Patent Is Offered for Sale—Schwarzkopf Engaged in Effort to Exploit It.

Despite the fact that it was generally supposed that the blow that knocked out the Selden patent was in the nature of a dampener to basic patents generally, at least so far as the automobile industry is concerned, another one of the sort has cropped up, although it is not wholly a stranger. It is the so-called Renault patent which is claimed to control those forms of transmission employing a shaft.

The patent was obtained by the Renault interests of France and, of course, covers only the American rights. It is No. 725,482, issued April 14, 1903. Specifically it applies to "speed changing and clutch mechanism for motor vehicles," and its general tenor suggests the application of swinging gears. The claims also include reference to the shaft form of transmission, and there are those who believe that they are wide enough to control that type of drive.

E. E. Schwarzkopf, until recently publisher of Automobile Topics, who now is publishing the house organ of the Automobile Club of America, claims to have acquired control of this Renault patent; at any rate, he has been endeavoring to dispose of it, and in doing so has sought to enlist the attention of the Association of Licensed Automobile Manufacturers, but so far without result. About a year ago Schwarzkopf himself made a secret trip to the Renault factory in the interests of the General Motors Co., which was reported to be anxious to obtain certain Renault rights. This patent is understood to be one of them, but for some reason or other the negotiations between the several parties failed to bear fruit.

Alden Sampson Plant Going to Detroit.

As was anticipated would prove the case, the Pittsfield (Mass.) plant of the Alden Sampson Mfg. Co. is to be uprooted and moved to Detroit; in fact, the dismantling of the establishment already has commenced, and two special trains have been engaged to transport the property to Detroit, where the machinery will set up in the immense new truck factory—it is 1,020 feet in length—which was constructed there when the United States Motor Co. obtained control of the Sampson interests.

Crow Drops Even the Name Black.

The severance of relations between the Crow Motor Car Co., of Elkhart, Ind., which manufactured the Black-Crow car, and the Black Manufacturing Co. of Chicago, which marketed it, now is complete, the name Black having been dropped from

even the title of the company's car. Henceforth it will be known only as the Crow and, meanwhile, the Black company is having its troubles in the bankruptcy court. The Crow company, however, is moving on to greater things, having just completed an addition to its factory at Elkhart, and, among other things, having arranged to build its own bodies. Otto F. Rost, who for two years represented the Black Mfg. Co. in New York, and handled the car in the Eastern half of the country and for the export trade, will continue to represent the Crow Motor Car Co. in the same capacities.

Weed-Willis Infringement Suit Postponed.

The hearing of the suit brought by the Weed Tire Chain Grip Co. against the E. J. Willis Co., of New York, for infringement of the Parsons patent, covering the Weed device, which was due to be called in the United States Circuit Court in New York on Tuesday last, 31st ult., was postponed until the 24th inst. The latter date is a tentative one, however, and is subject to change.

To Produce a Tire Filler in Pittsburg.

The Pneumatic Tubeless Tire Filler Co. has been organized in Pittsburg, Pa., to produce a foreign spongelike, puncture-proof, tire-filling compound, the American rights to which it has secured. The officers of the company are: E. J. Kent, president; Norwood Johnson, vice-president; William S. Hackett, secretary and treasurer; E. W. Rolfe, manager. A plant for the production of the compound has been set up at 5912-14 Baum street, Pittsburg.

Studebaker Lops Off \$1,350 from "40."

The Studebaker Automobile Co., South Bend, Ind., which until a few months since controlled the output of Garford "40" cars, which were termed the Studebaker-Garford, has reduced the price of that model from \$4,000 to \$2,650. The announcement was made last week and the lopping off of \$1,350 at one blow caused some eye-opening among the trade.

Steel Products Declares Extra Dividend.

The Detroit Steel Products Co., of Detroit, of which Walter S. Russel is president, has declared an extra cash dividend of 3 per cent., payable February first, at which time the regular quarterly dividend of 1¼ per cent. also will be paid. The extra dividend will make the total for the year 10 per cent.

National Carbon Stricken from Exchange.

At a meeting of the governing committee of the Chicago Stock Exchange last week, it was decided to strike the stocks of the National Carbon Co., of Cleveland, Ohio, makers of dry-cell batteries and other electrical appliances, from the unlisted department.

IN THE RETAIL WORLD.

T. S. Mitchell, of Monaca, Pa., has opened a garage at 311 East Sixth avenue, Homestead, Pa.

A two-story garage to cost \$9,000 is to be erected at Morris avenue and 165th street, New York City. Harry Lee is the owner.

T. F. Moore and W. A. McClure have formed a partnership and opened a garage in Mexico, Mo. They will handle the Ford line of cars.

The Keystone Auto & Supply Co., of Des Moines, Ia., is a new concern which just has been formed. Its salesrooms are located at 919 Locust street.

Under the style the Conneaut Auto Co. a new concern has been organized in the Ohio city of that name to do general garage business. V. E. Best is the manager.

Under the management of J. A. Taylor a garage just has been opened at St. George, Staten Island, N. Y. It is owned by the New Brighton Garage Co., of New Brighton, N. Y.

G. W. Fazer, who, in partnership with B. A. Flick, conducted the Flick Auto Co., Kearney, Neb., has bought out the interest of his partner and will continue the business in his own name.

The Greenville Motor Car Co. is the style of a new concern which has opened a garage on Broad street in the South Carolina city of that name. Dr. James L. Orr and George Orr are the owners.

William P. Babb has purchased the Fifty-third Street Garage in Philadelphia, Pa., and doubled its capacity. The garage is one of the largest in the Quaker City, and is located at 420-24 North 53d street.

An involuntary petition in bankruptcy has been filed against the University Motor Car Co., of Detroit, Mich. Newton P. Brooks, the Bailey Co. and the Charles A. Strelinger Co. are the petitioning creditors.

The Slaughter-Randal Co. is the style of a new concern which has opened a salesroom for tires and tire accessories at 2033 Commerce street, Dallas, Tex. E. D. Slaughter and R. M. Randal are the two partners.

Work has been started on a new garage at 350-352 Halsey street, Newark, N. J. It will be three stories high, finished in Indiana limestone, and will be in charge of J. W. Mason. Columbia and Maxwell cars are to be featured.

The Whitman Motor Co., of South St. Louis, has transferred its business to 4144 Olive street, St. Louis, Mo. Grabowsky trucks and Mercer pleasure cars will be handled by the concern, of which H. L. Whitman, Jr., is manager.

Business in Prest-O-Lite has been so brisk in Chicago, Ill., that the company found it necessary to open a North Side store at 509 Rush street for the convenience

of its customers, in addition to its large store at 1427 Michigan avenue.

The Haynes Automobile Co., recently organized in St. Louis, Mo., has opened a salesroom at 4129 Olive street where it will display Haynes, Cole "30" and Page-Detroit cars. Theodore Schiff is president and H. M. Paine secretary and general manager.

Two changes of location were recorded last week on Broadway, New York City. The Shepherd Motor Co. has leased the ground floor and basement of No. 1659, and the Sultan Motor Co. the second floor of the Thoroughfare building, at Broadway and 58th street.

John E. Roche, president of the Louisville (Ky.) Taxicab Co. and of the Louisville Carriage Co., purchased from J. C. Cannon for the sum of \$12,000 the entire stock of the Louisville Automobile & Taxicab Co. and the latter concern will be merged with the Louisville Taxicab Co. The stock purchased consisted in several limousines and a motor bus.

A. White, of Springfield, Mo., has purchased the garage of the Western Motor Car Co., at 319-327 South Jefferson street. He formerly was in partnership with Walter Tillman, at 219-21 South Jefferson street, where the firm dealt in E-M-F and Cadillac cars. Tillman remains at the old location, and will continue to handle the Cadillac line, while White will take over the E-M-F agency.

The H. J. Koehler Sporting Goods Co., of 291 Halsey street, Newark, N. J., has purchased the state agency business of the F. L. C. Martin Auto Co., and will handle the Hupmobile in the State of New Jersey hereafter. The Koehler company now controls Hupmobile sales in all the New England and Middle States. The Martin company henceforth will handle the Hupmobile in Plainfield only.

The Holcomb Motor Co., representing Packard cars in Indianapolis, Ind., has changed hands, R. A. Holcomb, president and chief stockholder, retiring from business. To take over its business the Meridian Auto Co. has been organized by several officers of the Waverley Co., of Indianapolis, and Packard cars hereafter will be handled in connection with Waverley electric at the salesrooms of the new company at 724-730 North Meridian street. Henry C. Schwartz is manager.

Recent Losses by Fire.

Chicago, Ill.—F. S. Black's garage, 4007 Wabash avenue, and six automobiles destroyed; loss, \$15,000.

Pittsburg, Pa.—Buhl Motor Car Co.'s garage, 220 South St. Clair street, and contents damaged; loss, \$500.

Dorchester, Mass.—Sturtevant Milling Co., supply manufacturers, factory and contents damaged; loss, \$10,000.

THE WEEK'S INCORPORATIONS.

Pittsburg, Pa.—West Penn Automobile Co., under Pennsylvania laws, with \$10,000 capital.

New Haven, Conn.—White Motors Co., under Connecticut laws, with \$5,000 capital. Corporators—R. P. Greist, H. M. Greist, W. A. Rutz.

Northport, N. Y.—C. M. Bonner Co., under New York laws, with \$5,000 capital; to deal in automobiles. Corporators—C. M. Bonner, Helen A. Bonner, Helen A. Thornburgh.

Goshen, N. Y.—Automobile Owners Mfg. Co., under New York laws, with \$1,000,000 capital. Corporators—F. H. Vahrenkamp, William Phillipson, G. F. Munns, of New York, and others.

Washington, D. C.—Frank G. Fickling Co., under the laws of the District of Columbia; to deal in automobile supplies. Corporators—Frederick K. Barbour, Frank G. Fickling, Harry S. Wood.

Indianapolis, Ind.—Seaton Spring Wheel Co., under Indiana laws, with \$10,000 capital; to manufacture and sell automobile parts, wheels and tires. Corporators—W. B. Cooley, W. H. Nussbaum, B. C. Seaton.

Cincinnati, Ohio—J. H. Louis Automobile Co., under Ohio laws, with \$7,500 capital; to manufacture and repair automobiles. Corporators—J. H. Louis, Peter Reiter, M. Y. Cheval, Thomas S. Danks, Edward Y. Schultz.

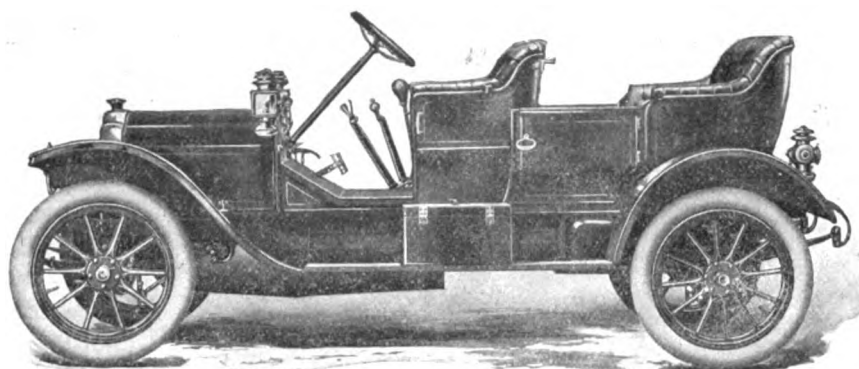
Memphis, Tenn.—Yeates Auto & Taxicab Co., under Tennessee laws, with \$10,000 capital; to operate a taxicab service. Corporators—Richard Yeates, I. L. Yeates, J. H. Newsom, J. W. Apperson, C. H. Dashiell.

Cleveland, Ohio—Anthracite Auto Co., under Ohio laws, with \$1,000 capital; to manufacture steam engines, valves, etc. Corporators—Sidney Seidman, Henry White, James A. Joyce, Adolph B. Ripner, George S. Queen.

Detroit, Mich.—Kirby Motor Car Co., under Michigan laws, with \$300,000 capital; to deal in and manufacture motor vehicles. Corporators—Mark W. Allen, Walter G. May, O. F. Hawley, Frank A. Kirby, all of Detroit.

Poughkeepsie, N. Y.—Ryder Motor Co., under New York laws, with \$7,500 capital; to repair and deal in second-hand automobiles and other motor vehicles. Corporators—Austin S. Ryder, Harry L. B. Ryder, Garfield L. Ryder, all of Poughkeepsie, N. Y.

Los Angeles, Cal.—Commercial Motor Co., under California laws, with \$300,000 capital, of which \$5 has been paid in; to manufacture commercial motor vehicles. Corporators—W. A. Eckerly, R. W. Towne, E. A. Shinn, M. F. Bangs, E. J. Borgmeyer.



The Long-Stroke Engine—An Explanation

THE long-stroke engine must economize in the use of gasoline, and we will try to make it plain—very plain—just why. You know whether you would prefer to fill a gallon crock or a quart measure (if you had to pay for it). The gallon crock is the large bore, short-stroke motor—the tall quart measure represents the medium bore, with the long stroke—both must be filled with gasoline in automobile work.

Of course the gallon crock has a greater capacity than the quart measure, but the greater capacity does not produce proportionately greater power. For example, you know that your revolver will not shoot so far nor penetrate so deeply as your rifle, using the same cartridge. In firearms we call it the length of barrel, and explain it by saying we get the benefit of the whole expansion of the gas. In automobiles it is the same thing, but we call it the length of stroke. In a rifle we get results because there is but one direction for the gas to expand—the length of the barrel—in automobiles, if there is but one direction in which to expand, and that dimension is sufficiently long, we get the full power.

White Motors Economical

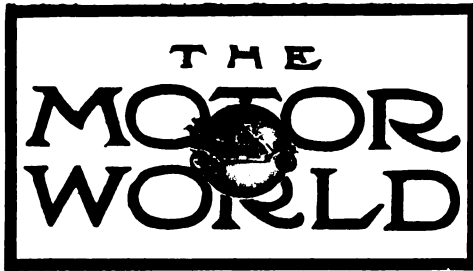
The above tells the whole story of the remarkable performance of White gasoline cars and trucks, from the standpoint both of power and fuel consumption.

The four cylinders of the White motor are more nearly rifle-barrels than any others, consequently less of the explosive medium is required to produce the high-power rifle results. One other advantage follows: because White motors are not large and unwieldy, White cars are of moderate size and weight, consequently get over the road more easily and are easier upon the tires and other items of maintenance.

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gladly sent upon request.

The White  Company

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NEW YORK, FEBRUARY 2, 1911.

The Motor World still retains the distinction of being the only publication that actually reports the national shows as they are, and not as they are supposed to be. Its reports are written after the doors have been opened and after an inspection of the cars themselves; they are not compiled from catalogs weeks before the shows are inaugurated.

The Dealer and the Truck Situation.

Unless they have a care it is to be feared that many dealers who have established themselves in the automobile business will awaken to the opportunities and necessities of the commercial vehicle when, if it is not too late, their way will be made the harder, that is to say, when others have embarked in the business and made the most of it.

In all save the larger cities there is no reason why this should be the case. There is no reason why the dealer who sells or garages or repairs motor cars should not

sell, garage and repair motor trucks also, and if he is wise in time he will set about doing so. It may require some slight changes in his system and necessitate the departmentizing of his business, but ultimately the effort should prove well worth while. For if any one thing is plainer than any other one thing, it is that practically every person who now maintains even one horse and wagon for delivery purposes is thinking of replacing them with a motor wagon or can be induced to think of it. It needs but the most casual inquiry—the most perfunctory scratching of the surface, to discover how general is this trend of thought. The butcher, the baker and even the candlestick maker all are inclining that way.

The established automobile dealer, therefore, should so position himself as to take advantage of the conditions. He should not wait until he is forced to do so by the appearance of a newcomer on the scene. In other words and in commonplace language, he should not permit the business to get away from him, for there undoubtedly exists more or less "manufactured" disposition to mark a line of cleavage between the car and the truck and to consider them as things apart.

The sudden influx of truck publications and the organization of so-called truck clubs and truck associations, usually furthered by men who have ends to gain, is a manifestation of this disposition. There is, however, small reason for the existence of such bodies at any time, and no reason at all at this time. Such manufacturers' or dealers' organizations as already exist are sufficient to meet the needs of almost any occasion, and the formation of separate bodies to deal with commercial vehicles is unwise and unnecessary, and merely add to the complexities and burdens of the industry, however they may be used to feather the nests of shrewd individuals. They should be combated wherever they appear. They tend to separate the automobile manufacturer and the automobile dealer from what properly and rightfully is their own.

In positioning himself to meet the new and enlarged conditions, the dealer should be more than ordinarily careful to "get in right." He cannot afford to trifle with experiments or to permit price to overshadow his better judgment, for the truck or wagon that fails to give satisfaction is of far more damaging influence than is the

pleasure car which falls within that category.

In commenting on a semi-humorous suggestion that horsedrawn vehicles should be required to pay a tax or registration fee because of the damage they do to the public streets, the New York Globe gently flouts the idea, but in all seriousness declares that automobilists not only desire, but "demand" that they be taxed because of the wear and tear caused by their means of conveyance. But we doubt that the "demand" is sufficiently vociferous to be heard any considerable distance. The average motorist prefers to be taxed and treated exactly as are the other human beings that use the highways. There seems no logical reason why he should be made to bear a greater burden or a lesser one. If registration fees and heavy fines and contraction of state lines are good for the users of motor vehicles, they should be as good for the users of all other vehicles.

The Camden Motor Club should shake hands with the Mercer County Automobile Club. They both are located in the same state, New Jersey, and apparently are of the same peculiar stripe, although being removed from the capital it was supposed that the Camden organization was not so adaptable to the uses of the politicians as is the Mercer County Club. When last year the latter opposed the enactment of a law establishing reciprocal relations between states, the handiwork of the politicians was plain, but similar action just taken by the Camden club is not so easily fathomed. If it is not ashamed of itself, it ought to be. Its action is of the sort that will induce all New Jerseymen to be made "marks" of by all states in exactly the same fashion as the Camden men complain they were treated by the Pennsylvania authorities.

Perhaps the Massachusetts Highway Commission is so skilful that it is able to split hairs and yet do equal and exact justice to all, but its admission that it has suspended or revoked the licenses of drivers involved in accidents, although the burden of proof showed that the pedestrian concerned chiefly was to blame, will impress the ordinary man as smacking of the extreme of the law's injustice. When justice is dispensed in this fashion the motorist has a right to rail. He has sins enough of

his own to answer for and enough others unfairly charged to him without being required to be offered up as a sacrifice for the faults of others. The astonishing admission of the Highway Commission suggests that in Massachusetts the motorist is very much a "goat" and is being treated as one by the officials controlling the affairs of the Commonwealth.

Although promptly over-ruled by the governor of the state, Maryland's commissioner of motor vehicles who, in making known that he had notified the president of the United States that he must secure a Maryland license for his cars, bombastically declared that "presidents, princes and potentates look alike to him," unconsciously served the interests of the Federal registration bill, which Congress has treated with only perfunctory courtesy. After a few more Federal officials and congressmen are held up and fined or required to pay for a collection of state tags, they may begin to appreciate the real necessity of a measure that will guarantee freedom of travel to all citizens of the United States in every one of the forty-eight states comprising the Union.

One manufacturer has been so carried away by the term "fore-door" that he has applied it to his two-passenger roadster or runabout which has but one door on each side. Nothing could better serve to show the inadequacy or inappropriateness of the term. However apt, if a front door is to be styled a "fore door," the rear one properly should be designated an "aft door." "Closed front" seems an equally apt and more sufficient characterization, and one which, without straining, avoids conflicts of etymology.

The advocates of examinations of and licenses for owners might permit the "fearful complexity" and "difficulty" involved in handling the wheel or lever of an electric runabout, for instance, to enter into their arguments. Perhaps it is more difficult to drive and control such a vehicle than it is to handle the reins on a horse; a demonstration, however, surely would prove highly illuminating and exceedingly helpful, particularly if the horse used in the efficiency test is possessed of an obstinate or nervous temper, and shows it by bolting.

COMING EVENTS

January 28-February 4, Chicago, Ill.—National Association of Automobile Manufacturers' tenth annual national show in Coliseum. Pleasure cars and accessories only.

January 30-February 4, Troy, N. Y.—Troy Automobile Club's show in State armory.

February 1-4, Worcester, Mass.—Worcester Licensed Automobile Dealer's Association's show.

February 4-11, San Francisco, Cal.—San Francisco Motor Club's show in Dreamland and Pavilion rinks.

February 6-9, Grand Forks, N. D.—Grand Forks Automobile Dealers' Association's show in Auditorium.

February 6-11, Chicago, Ill.—National Association of Automobile Manufacturers' tenth national show in Coliseum. Pleasure and commercial cars, motorcycles and accessories.

February 6-11, Buffalo, N. Y.—Buffalo Automobile Trade Association's ninth annual show in Broadway Arsenal.

February 8-12, Davenport, Ia.—Davenport automobile dealers' show at Commercial Club.

February 11-12, Oakland, Cal.—Racemeet on Oakland motordrome.

February 13-18, St. Louis, Mo.—Annual show in Coliseum.

February 13-18, Washington, D. C.—Second annual show in Convention hall.

February 13-18, Winnipeg, Canada.—Winnipeg Motor Trades Association's show.

February 13-18, Kansas City, Mo.—Motor Car Trade Association's show in Convention hall.

February 13-28, Dayton, Ohio—Second annual show in Memorial building.

February 14-18, Memphis, Tenn.—Memphis automobile dealers' first annual show in the Auditorium.

February 16-18, Fort Wayne, Ind.—Fort Wayne Automobile Association's first annual show.

February 18-25, Binghamton, N. Y.—Annual show.

February 18-25, Minneapolis, Minn.—Minneapolis Automobile Show Association's annual show in National Guard Armory.

February 18-25, Newark, N. J.—New Jersey Automobile Exhibition Co.'s fourth annual show.

February 18-25, Brooklyn, N. Y.—First annual show of Brooklyn automobile dealers at 23d Regiment armory.

February 18-25, Cleveland, O.—Show in Central Armory.

February 18-25, Albany, N. Y.—Albany Automobile Dealers' second annual show in State Armory.

February 20-25, Cincinnati, O.—Cincinnati Automobile Dealers' Association's show in Music Hall.

February 20-25, Hartford, Conn.—Hartford Automobile Dealers' Association's fourth annual show in Foot Guard armory.

February 20-25, Omaha, Neb.—Third annual show of the Omaha Automobile Show Association in Auditorium.

February 21-25, Baltimore, Md.—Annual show in Fifth Regiment Armory.

February 22, San Francisco, Cal.—Panama-Pacific road races.

February 24-27, New Orleans, La.—First annual show of New Orleans Automobile Club at Fair Grounds.

February 24-25, Keene, N. H.—Consolidated Motorcyclists' third annual motor vehicle show.

February 25-27, New Orleans, La.—New Orleans Automobile Club's annual Mardi Gras racemeet on Fair Grounds track.

February 25-March 4, Toronto, Canada.—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building and Horticultural Hall.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

March 11-18, Cleveland, O.—Manufacturers and Dealers' Association's show in Central Armory.

March 14-18, Denver, Col.—Annual Show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 15-18, Louisville, Ky.—Louisville Automobile Dealers' Association's annual show in First Regiment Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

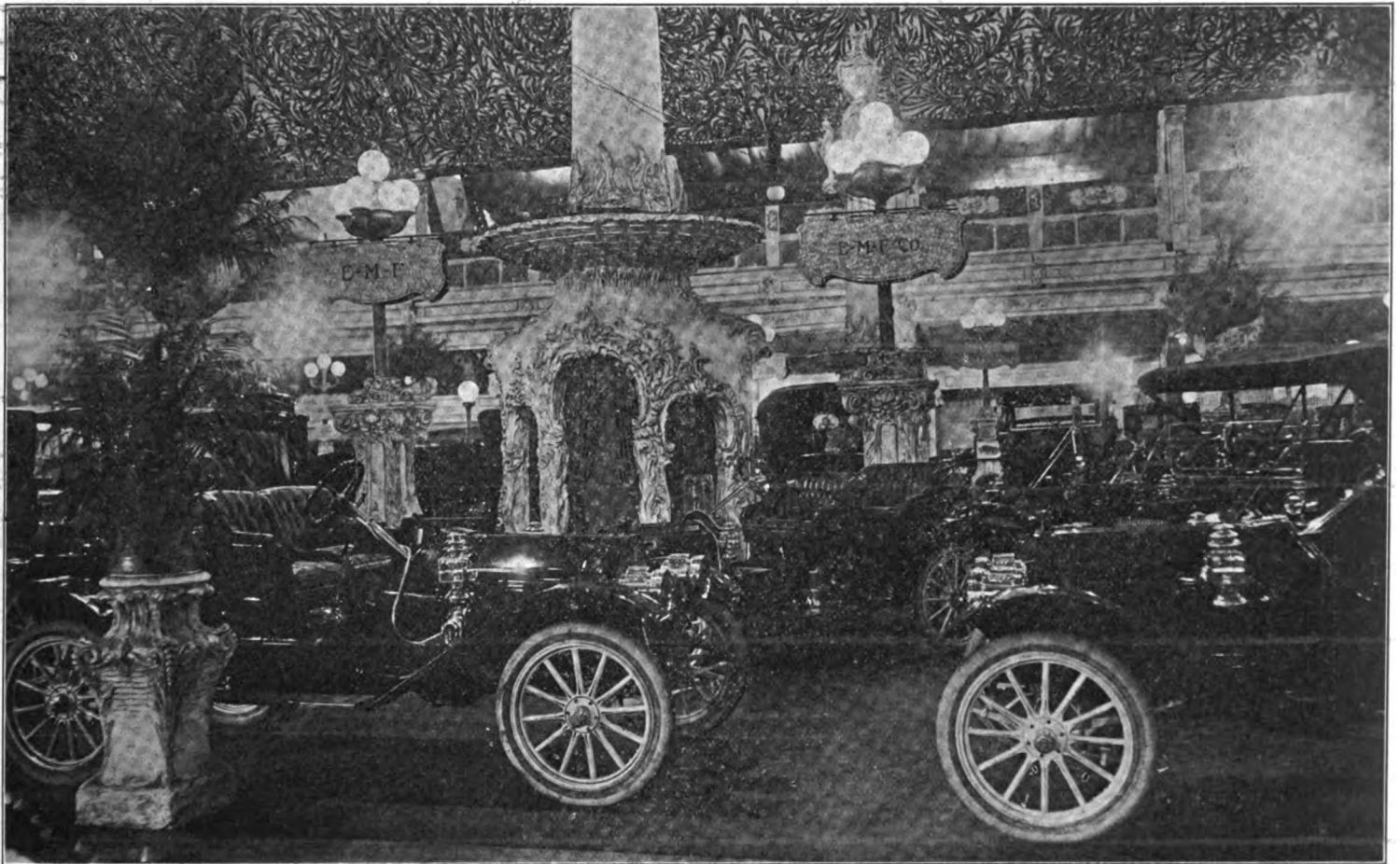
March 25-April 1, Pittsburg, Pa.—Pittsburg Automobile Dealers' Association's fifth annual show in Duquesne Garden.

March 27-30, Jacksonville, Fla.—Racemeet on Atlantic-Pablo Beach.

April 1-8, Montreal, Can.—Annual show in Coliseum.

Chicago's Show in Spectacular Setting

Suggestions of Louis XV Not Particularly Pronounced but Plentitude of Plaster of Paris Indicates French Dressing—Impressive Display of Cars Includes Some Promising New Comers but Not Much of Novelty is Disclosed.



AT THE BASE OF ONE OF THE "FOUNTAINS"; E-M-F AND FLANDERS CARS ON DISPLAY

Chicago, January 30, 1911

Perhaps that French dressing which garnishes that portion of the national show which is staged in the Coliseum is suggestive of the reign of Louis XV; but it is well that the decorators of the show dropped the suggestion in advance. Louis XV himself and close students of French history might have no trouble in recognizing and tracing the similarity, but if the ninety and nine of those who are in attendance are asked wherein the analogy lies, their answers variously phrased as well might be: "You can search me."

One sacrilegious chap declared that it reminded him of the scenic railway at Coney Island, but he hails from the East, and as a result his opinion does not count for much. Another who resides nearer to Chicago thought the decorations suggested the "White City" of his native place, and as "White Cities" and Coney Islands are

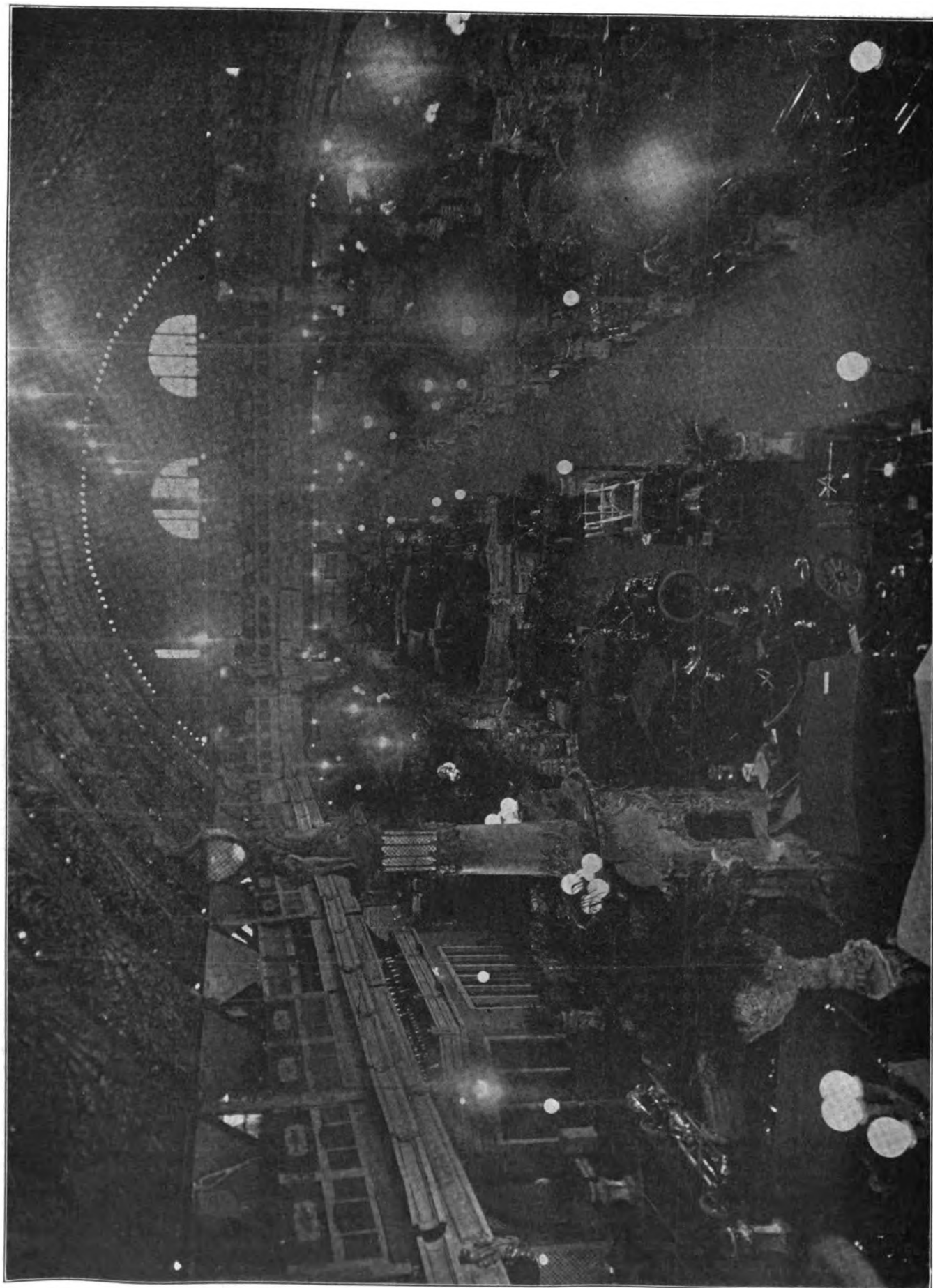
not far apart, it is a case of pay no money and take your choice. On the other hand there are lots of people who have been heard to describe the show as "gorgeous," and their opinions are worth as much as anyone else's.

They are strong on spectacular adornment at Chicago shows, and there is no discounting the spectacularity of this one; it's a screamer; that what it is. The "English gentleman's country estate," with its red brick fences and its spreading chestnut trees which was set up in the Coliseum last year—and which this year is performing service next door in the First Regiment Armory—appeared intensely theatrical, but it compares with this year's decorative scheme as a strawberry festival compares with a Hippodrome display.

The great piles of white stuff fashioned into wonderful shapes and tinted blue and pink and green; the yards of painted

panelings of roses and fleur de lis; the great expanse of blue bunting hiding the roof with painted squares and amazing scrolls and flourishes and curlicues, and mildly, very mildly, suggestive of stained glass—all these and the shower of light suggest a musical extravaganza. If a buxom fairy wearing spangled tights and holding aloft a golden wand would but appear, the scene would seem complete. There are some buxom "fairies" here, too—eight of them, to be exact, but they wear no spangles and they carry no wands. They are as free from gauze and geegaws as was Mother Eve. They are poised high, two each on the four great picturesque fountains which constitute the pieces de resistance of the decorative scheme; and their plaster of paris skins give no evidence of being affected by the temperature. Of each pair of ladies, one holds a cornucopia, the other bunches of grapes. Perhaps it is the fleur

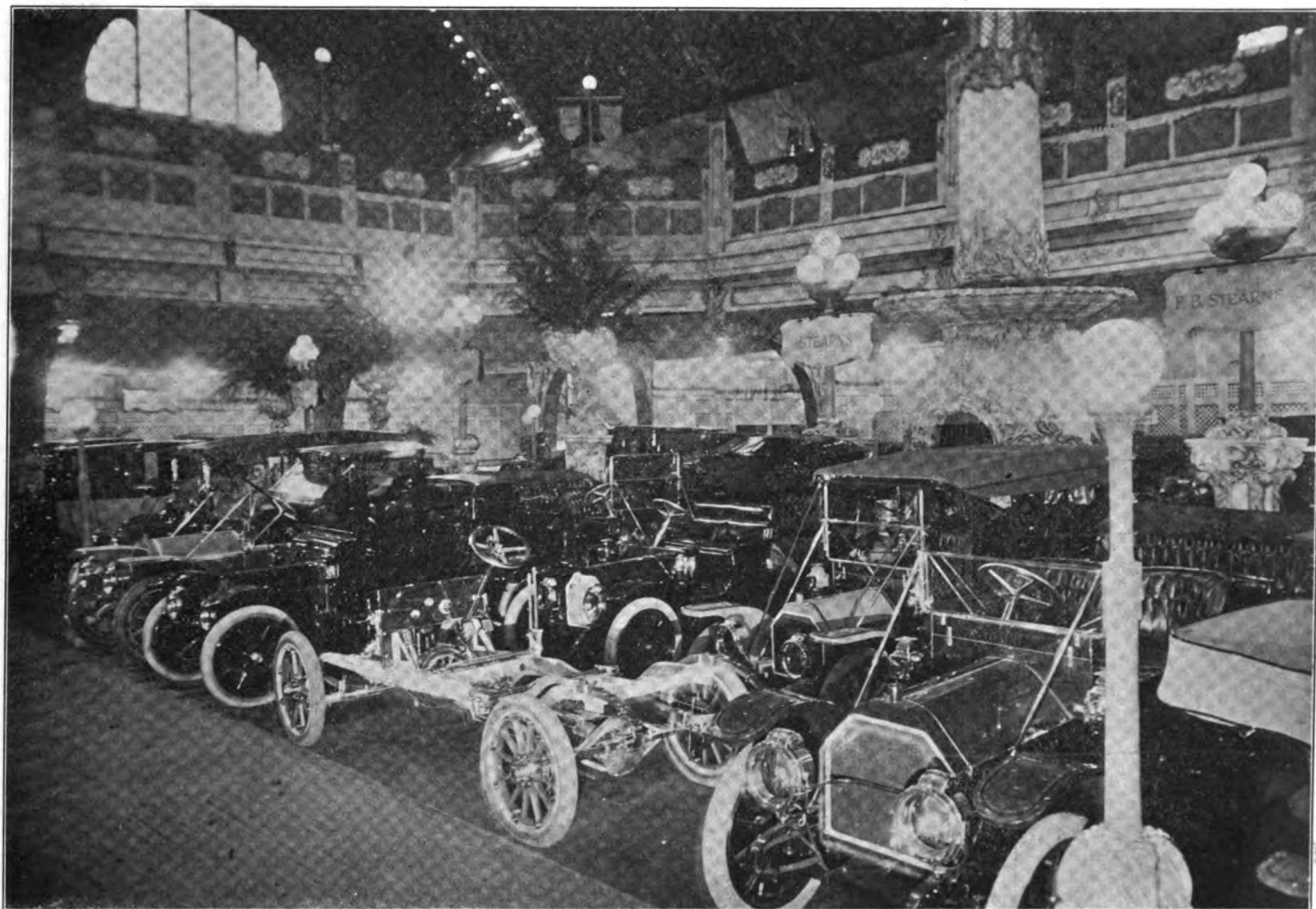
GENERAL VIEW OF THE CHICAGO AUTOMOBILE SHOW, SHOWING THE MAIN FLOOR AND GALLERY OF THE COLISEUM.



de lis that is suggestive of royalty and the plaster of paris that suggests France.

Entering the Coliseum thoughts of automobiles are, for the moment, sent flying. The gorgeousness of the setting at once fills both eye and brain. Not counting the exhibits staged against the four walls and under the overhang of the gallery, the Coliseum is divided into four sections, the ends of each section being marked by undraped maidens are poised on the shelving from which the water falls, and are in no danger of being wetted. The pedestals, the seashells, the fountain, all are splashed with pink and blue tints, and the seashells are "punctured" or broken out in many places, and electric lights concealed within glow softly through the red and blue and green fabric with which the "punctures" have been "patched." The effect is that of

ployed to mask its nakedness. In the Coliseum Annex, which adjoins the main hall, the walls and ceiling are covered with trellis work on which red and white and yellow flowering vines are creeping. In the Annex basement, where the newer cars are half concealed, there is naught but bunting. The two entrances to the basement are off the main line of travel and are not readily distinguishable. As a re-



THE EXHIBIT OF NATIONAL CARS WHICH OCCUPIES A PROMINENT POSITION

lating "billows" of staff work from which are upreared vases containing flowering plants and pedestals topped by seashells of heroic size in which plants also flower. Each section is bisected by a row of similar vases and seashells of even more heroic size and by another pedestal bearing the sign of the exhibitor done in gold and topped by clusters of glowing globes; towering over all and centered in each of the four sections are the four great fountains. They are 38 feet in height, and each is topped by a huge fancifully shaped lantern illuminated from within. The bases of the fountains are 30 feet wide, and suggest grottoes within which the electric motors which operate the fountains are concealed. The fountains, by the way, do not "play" in the accepted sense. The water simply falls downward. The

many jack-o'-lanterns. The real beauty of the scene is obtained in the half light before the "big lights" are turned on, which means that few spectators obtain the view of it.

Staff work splashed with gold and conforming to the shape of the supporting girders which the staff conceals hold up the balcony under which are located the other cars in the Coliseum; these exhibits are surrounded on three sides by a trellis effect, and are "sentinelled" in front by posts carrying a lighted globe and by staff pedestals carrying potted plants. The underside of the gallery and the railing are entirely hidden by painted panelings of flowers. In the gallery itself, which is peopled by the "first choice" of the accessory exhibits, green and yellow bunting is em-

sult, few spectators go "down below," and the exhibitors there never have been able to "get much of a run for their money." This year one of the red-coated, red-capped, street-trousered ushers has been stationed at one of the entrances to play the part of "barker" and direct the crowd to the lower regions. The barker evidently knows a main chance and a piece of money when he sees it.

"See the gasolene pleasure cars and electrics in the basement!" he shouts about once in every 60 seconds in true Coney Island barker style, the while indicating the basement with a barker's cane. Then every once in so often, after a glance around to see if "the boss" is within hearing, he slightly alters his cry.

"See the ——— gasolene car and other

pleasure cars in the basement!" he yells, mentioning the name of one of the cars staged there.

The First Regiment Armory, in which, as usual, the "overflow" of exhibits is located, is reached by the familiar alley in the rear of the Coliseum. In other years the alley has been walled in with boards and re-

the exhibitors from Indiana apparently was so deeply moved by the setting that he either hired a canary in a gilded cage or sent home for the family warbler; at any rate he has one suspended from the top of his touring car.

Practically all of the show cars that compelled notice in New York are in evi-

National double limousine and a Hupmobile coupe finished in blue are among the number.

Of the cars that were not exhibited at either of the New York shows, and which are staged here, the Rambler easily is the most prominent and best known. It is shown to good advantage, its spare wheel



THE MARMON EXHIBIT AND THE LATTICE WORK DECORATIONS IN THE COLISEUM ANNEX

sembled a tunnel; this year it merely has a roof of canvas.

The decorative scheme in the armory is, as already indicated, that of an "English gentleman's country estate," the same that last season was used in the Coliseum and which then appeared so theatrical. Now, however, by comparison with the "showy" nature of the Coliseum's embellishment, the "gentleman's estate" appears sedate almost to the point of modesty. The brick walls, the grill work gates and the great spreading trees all are in place and appear not to have suffered by the year they have spent in camphor or other preservative. One of

dence here—the Pierce-Arrow George Washington coach, the strikingly harmonious blue Stevens-Duryea double limousine, the equally striking "Sedan" limousine and double limousine bearing the Stoddard-Dayton name, the Speedwell "Duck Boat," the Franklin with its "fire alarm" red body and black doors, the baby blue Hupmobile—these and others and all of the impressive and handsomely finished chassis which made New Yorkers look and admire also are here for the inspection of the Western folk. Since the New York show a few of the makers have completed other models that are shown here for the first time. A

rendering it distinctive, and the sizes and general appearance of the cars, indicating how the Rambler people have broken away from their original popular price standard and entered the realm "higher up." An attractively designed and substantial coupe—the first Rambler of the sort—is additional evidence of the altered policy. Of the new cars, the Colby, the Republic and the Ames are of the number that compel notice, the Republics finished in white and one of them, a two-passenger roadster with a bulging and rounded turtle-back, being a particularly striking creation. Of the electrics that have not been previously shown

this year, the Babcocks are quickest to catch the eye, because of the display of two models that of the "gasolene types"—one a smart little runabout with projecting hood and bucket seats, the other a big closed-front touring car that except at close

range cannot be distinguished from the gasolene cars employing similar bodies.

All of these things are of as much of interest to the people of the West as they were to those of the East and bumper crowds have gathered to see them. The

Chicago weather man has behaved himself and the attendance each day has been large, the great number of fur caps and felt ones provided with ear laps betokening that the Great West which is out of Chicago is well represented.

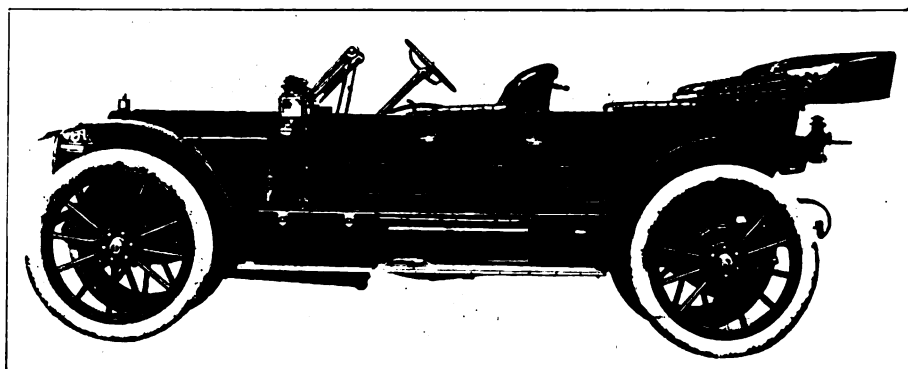
Concerning the Cars that Were Reserved for the Chicago Show

However new they may appear to Western eyes, the two New York shows skimmed the cream from most of the exhibits that are displayed here. There are an even 30 different cars that were not on view in New York, to be sure, 11 of which have not been exhibited at a national show before, while the remaining 19 are older makes of greater or less repute, but, naturally, they add little to the sum total of mechanical knowledge.

Referring more particularly to the entirely new products, however, there is this important observation, that almost without exception the newcomers are built along lines of recognized merit. In the past Chicago has been more or less of a "dog town," to borrow from theatrical parlance, in respect to the presence of several manufacturers who were "trying out" their new ideas in construction on the open-eyed public that swarmed from the Middle West. This year, however, not a single machine appears that is palpably built around a single invention, as sometimes has been the case in the past, nor are any of the new products of as dubious a character as some of the newcomers of other years.

ing, the show, as a spectacle, may be considered somewhat less filled with interest for the sensation-seeker than have been other Chicago shows, but it is none the

have proved thoroughly worthy of retention after several seasons of service in the hands of the public. Such features include the spare wheel, which affords many of



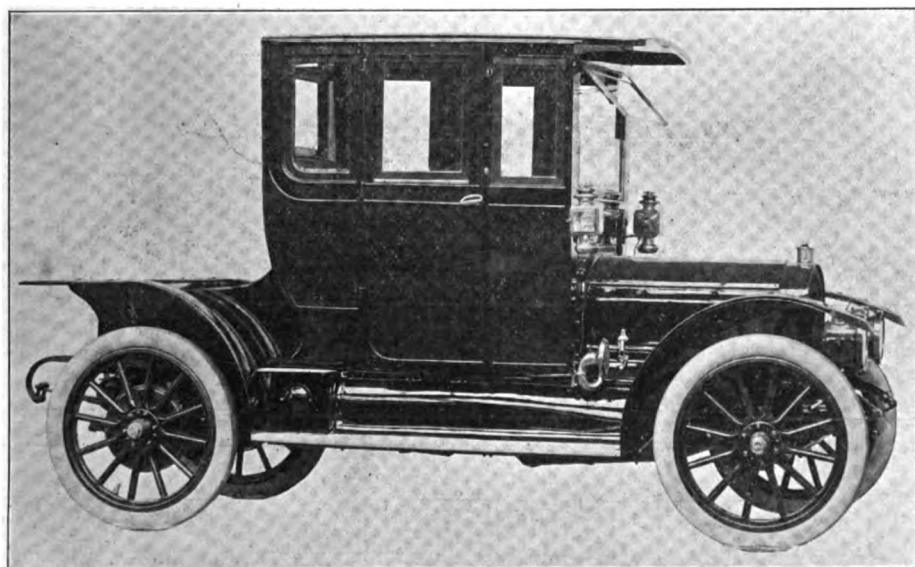
RAMBLER 65 WITH 4½ INCH TIRES AND 40 INCH WHEELS

less creditable to the show. Such being the case, however, it is impossible to do justice to the newer elements of the show, save by individual consideration of the new displays.

By all odds the best known of the products which are being exhibited for the first

the advantages of the demountable rim and also provides means of replacing a broken wheel in case of accident; the expanding band clutch, the safety spark retarder attachment to the starting crank and the accessibility of the engine crankshaft, which is secured by constructing the crankcase with openings on the right-hand side sufficiently large to permit the withdrawal of the pistons without the necessity of dividing the crank case into two separate sections. The crank shaft, with its bearings, may be removed through the front end by the dismounting of the large plate that supports the bearing.

Large wheels are another feature, model 65 now having a 40 x 4½-inch tire equipment, instead of 36 x 4½ as last year. A straight-line transmission is secured by the device of mounting the gearset on the forward end of the torsion tube, thus necessitating the use of but one universal coupling between the engine and the rear axle. A new feature this year is the so-called seven-eighths elliptical rear suspension which replaces the three-quarter elliptic mounting of last year. The upper member of the spring, instead of being cut off at the point where it is clamped to the frame, is carried forward a distance roughly equal to ¼ the total length of the lower member, the upper leaves being of graduated length as in the standard form of spring. Instead of being joined to the front end of the lower member, as would be done with a full-elliptical spring, however, the front end of the "¾" section of the spring is anchored directly to the frame. The effect is to give additional resilience to the upper sec-



THE NEW RAMBLER 63 THREE-PASSENGER COUPE

That of the 11 entirely new products, all but two are of 30 to 40 horsepower and solidly built, may be taken as an indication that the makers who are coming into the field at this time are not doing so without close study of the market and not without the object of catering to a certain known demand. As the dog-town element is lack-

time this year, as well as one of the older makes, is the Rambler, which has passed through a process of upward evolution during its existence until at the present time it ranks among the larger and more pretentious cars on the American market. Furthermore it has the rare distinction of possessing several exclusive features which

tion, thereby measurably reducing the stresses upon it at the principal point of attachment.

As a matter of course, all models now are equipped with closed-front bodies, several different sizes and styles of touring and roadster equipments being produced. A full line of enclosed cars now is produced—another new feature of the line, as only a limousine has been built hitherto—while quite the newest offering is a three-passenger, inside-driven coupe, the interior of

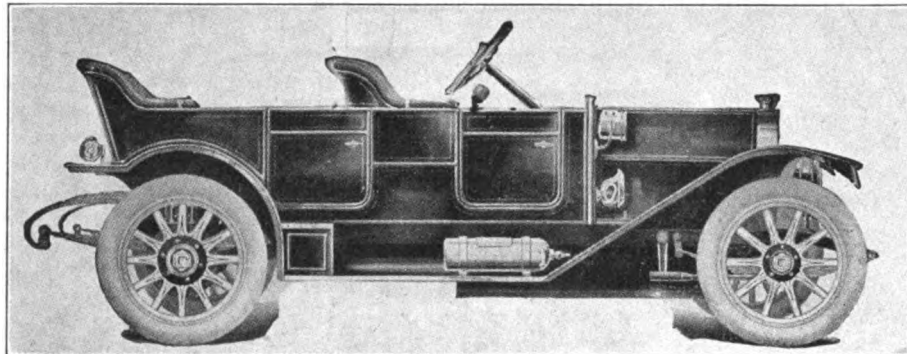
by radius rods, the tube and joint are relieved of considerable work which they otherwise would be called upon to bear.

One of the several local products that have improved rapidly during the past two or three years is the Staver, which appears this year in entirely revised form and with a number of points of structural merit in its favor. In addition to the 30 horsepower model, which was introduced last year, two other styles of chassis now are built, one

for the splash to drain into the bottom of the latter. The result is that the drainage from the cylinders trickles down the wall of the base and settles in a pool at the base, seeping up through perforations in the false bottom to form a pool. The system thus possesses some of the advantages of the "pump-over" method which is so much used at the present time.

The motor and selective change gear are mounted on a sub frame, the space between the main and sub structures being enclosed by a sheet metal filler. A solid form of rear axle with torque tube and radius rod anchorages is employed, the latter being attached to the frame on the same transverse axis, to prevent distortion under spring play. The bodies shown are built along modish lines and finished as becomes an old-line carriage maker.

By virtue of some rearrangement of structural details as well as an entirely new outfit of bodies, the Crow line has been expanded to the extent of ten different models; for which five different styles of chassis are required. The Crow cars, formerly known as the Black Crow, but now plainly marked "Crow Elkhart," and distributed, as well as made, by the Crow Motor Car Co., of that Indiana city, belong to the medium priced class of vehicles, and are designed along standard lines. Referring to the alterations which have been made since the car last was exhibited, the same style of chassis that heretofore was used for the four-passenger surrey now has a



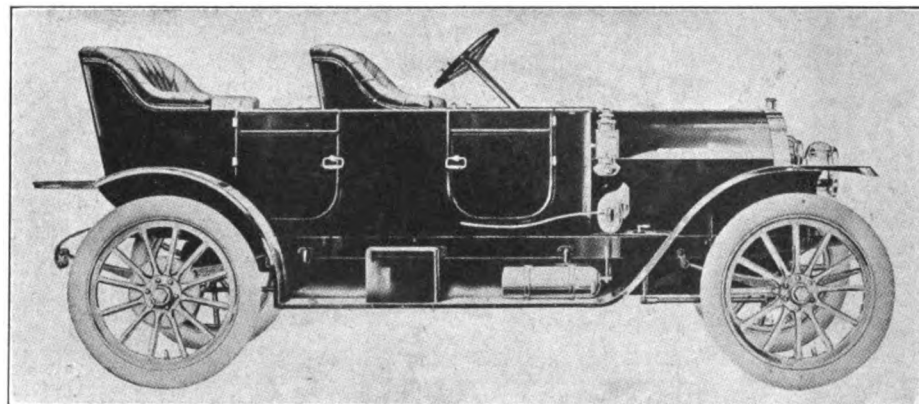
COLBY MODEL H FIVE-PASSENGER TOURING CAR

which is trimmed in polished hard wood, instead of being upholstered in the more conventional and somber style.

Although the new Colby car is rated as a five-passenger seating capacity, it provides accommodation for five passengers of far more liberal proportions than do many of the other five-passenger machines that are to be seen at the show. It is of pleasing, straight-line design, built with closed-front and straight dash. One of its noticeable features is the unusually liberal width of the rear seat, which is accomplished by "tunneling" the wheels into the body and narrowing the rear mudguards proportionately. To give ample width in the front of the tonneau the floor is brought out over the front hanger of the rear spring. The result is an amount of floor area that would do credit to many a car designed for seven passengers. The front seat also has ample foot room, while the levers are brought up inside the door on the right-hand side in a convenient manner.

The chassis is equipped with a standard form of motor of $4\frac{1}{8} \times 5\frac{1}{4}$ -inch dimensions and 35-40 horsepower rating, which has a circulating, pressure-feed oiling system located entirely within the crankcase, and, therefore, conducive to a clean engine in service. Ignition is by the Eisemann dual system. The gearset, as well as the motor, is sub-frame mounted, the former being of the selective type and connected to the motor by a steel-to-steel multiple disk clutch. The rear axle is heavily built with a liberally proportioned torsion tube which is coupled to the frame at its forward end by means of a large ball and socket joint. The tractional stresses being taken care of

of 35 and the other of 40 horsepower rating. The former, which is on view at the show in chassis form as well as in touring and runabout patterns, is particularly noteworthy. It has a $4\frac{1}{8} \times 5$ -inch block type motor of T-shaped cylinder formation, which in itself has a number of novel points. In addition to the placing of the valves on opposite sides of the cylinder, which is



CROW MODEL 15 FIVE-PASSENGER CLOSED-FRONT TOURING CAR

something of a novelty, it may be observed that the half-time gears are enclosed directly in the crank case, and that a convex cover plate is provided for the top of the cylinder casting for the purpose of concentrating a large body of water directly over the combustion chamber.

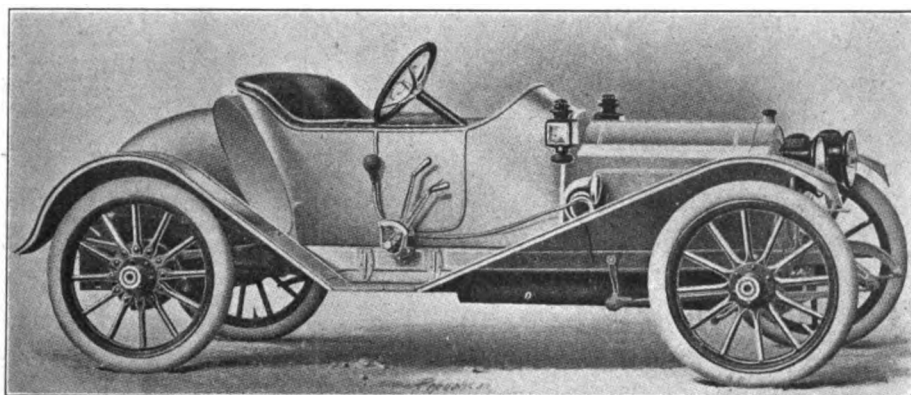
To ensure uniform oil distribution an entirely original scheme is employed in the shape of a sheet metal lining or false bottom for the crank case, which extends upward at the sides nearly to the level of the crank shaft. Sufficient space is provided between the liner and the case at the sides

motor of $4 \times 4\frac{1}{2}$ -inch dimensions, the bore being a quarter-inch larger than before, while it also is fitted up as a racing runabout and a so-called enclosed roadster, or closed-front runabout for two passengers. For the four-passenger touring car, the same mechanism is used with a slightly longer wheel base than before.

Entirely new models are the 35-38 horsepower chassis, which has a $4\frac{3}{8} \times 4\frac{1}{2}$ inch motor; the 40 horsepower, which has a motor of $4.5-16 \times 4\frac{3}{8}$ inches; and the 40-45, the cylinder dimensions of which are $4\frac{3}{8} \times 5$ inches. Closed-front touring bodies are

applied to each of these chassis, while the 40 also is built as a racing roadster.

Coming into the show at a late hour and practically unheralded, the Republic car, which is manufactured and exhibited by the Republic Motor Car Co., of Hamilton, Ohio, takes its place among the cars of the better class, and, judging by the appearance of the chassis, should prove an appealing and serviceable vehicle. Its factory origin



THE NEW REPUBLIC 35 HORSEPOWER TORPEDO ROADSTER

is very close to that of the Hamilton-Corliss engine, which is well known in mill practice, and its engine in particular has received very careful attention. It is of $4\frac{1}{4}$ x 5 inches, bore and stroke, and rated at 35 horsepower. The cylinders are of T-head form, cast in pairs and built with very large valves and liberal manifold areas. Double ignition is used, one system being the Bosch high-tension magneto, while the other is the Delco single spark. The engine is mounted on a sub-frame, which is a little out of the ordinary in that it is carried considerably below the main frame level, the crankcase supporting arms being carried on raised brackets, which are formed integrally with the sub-frame members, the latter being of pressed steel.

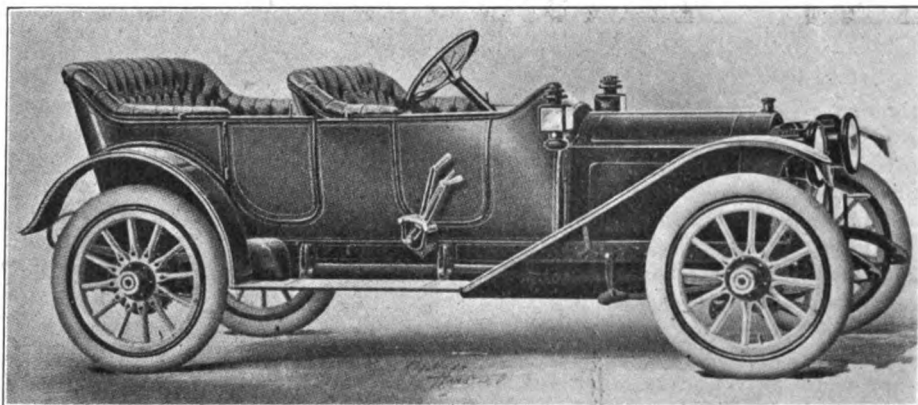
Transmission is by means of a large cone clutch with cork inserts and propeller shaft with torque tube enclosure attached to the cross-frame member by means of a heavy yoke, and an axle-mounted selective gearset. The frame, which has a high "kick-up" in the rear, is very low through the waist, affording a low center of gravity for the car and also allowing ample clearance for the three-quarter elliptic rear springs. The chassis, which is used for both runabout and touring bodies, has a 116-inch wheelbase, and is equipped with 36 x 4-inch tires. Both body styles are built with closed fronts, the runabout being of the fatted turtle-back torpedo style and rather distinguished in appearance.

Dorris cars, it is explained, have been altered more this year than ever before in the six years that they have been on the market. Yet the alteration, while significant in its way, is not of the sort that

readily is apparent. The features that have rendered their design distinctive are retained, including the strong girder construction whereby the rear of the motor is suspended the gearcase rigidly attached to the crankcase to form a true unit power plant with the flexibility of three-point support, the long propeller shaft and the three-quarter elliptic rear suspension. The changes that have been made are in the way of enlargements for the most part,

designed so that while the road clearance is 10 inches as before, the load is carried lower, the use of flatter springs and a slightly different system of mounting rendering this possible. Timken roller bearings are used in both axles as well as in the three-speed selective gearset, which, with the multiple disk clutch, is mounted in unit form with the engine, as already indicated. The bodies, both touring and limousine, of course have been redesigned, and while of standard construction, reveal decidedly attractive lines.

Among the relatively few cars that are built in Chicago is the Diamond T, a product which boasts not a few original details, is nicely finished and, in respect to body equipment, built more or less on the custom plan. In general arrangement it has not been altered materially for several years, but in point of detail the larger of the two models produced has undergone several changes since last year. The motor, for example, while of much the same general proportions as before, has been entirely rebuilt. It now has a "pump-over" oiling system in which two plunger pumps are used, the method of distributing the oil to the troughs in which the connecting rod ends dip being such that the natural tendency of the lubricant to "bank" in the lower end of the case when the car is on a grade is automatically compensated for, the surplus oil being drawn from the lower end of the case and fed to the upper end in increased amount. The valve stems are



THE ENGER 40 FOUR-PASSENGER TORPEDO MODEL

which is to say that the car, while still rated at 30 horsepower, is really larger and more powerful than heretofore. The bore of the cylinders, which are of the valve-in-the-head type and cast in pairs, has been increased $\frac{1}{8}$ inch, the present dimensions being $4\frac{3}{8}$ x 5 inches, bore and stroke. To accommodate the additional working pressures, all moving parts have

been enlarged correspondingly, the crankshaft bearings in particular having been increased to very liberal proportions. The base reservoir type of engine oiling system has been introduced to replace the pressure-feed system with external tank, formerly used, while the Bosch dual ignition system has been made standard equipment, although the Atwater-Kent single spark system, heretofore used, is offered as an option. The wheelbase has been increased from 110 to 115 inches and 36-inch tires adopted, instead of 34, the size used last year. In addition, the axles have been re-

enclosed by removable cover plates, an equally meritorious feature of the valve system being the placing of the spiral two-to-one gear under spring tension to do away with backlash. Both the push rods and valve stems operate in an oil bath splashed from the crankcase, the push rods being no less than one inch in diameter and drilled out for lightness. The frame and some other parts of the machine, including the springs, also are new this year.

To accommodate such purchasers as may desire to use an electric-lighting system with one of the several new forms of gen-



STEARNS CARS SHOWN TO ADVANTAGE IN A WELL-FILLED STAND

erator that now are on the market, the engine is provided with a bracket especially designed to mount such a generator. The engine dimensions now are $5 \times 5\frac{1}{2}$ inches, bore and stroke, and the cylinders, which are of the L type, are cast in pairs. Multiple disk clutch with 59 steel plates and selective three-speed change gear with shaft drive, $36 \times 4\frac{1}{2}$ -inch tires, Bosch dual ignition and a complete equipment, including top and windshield, are the other principal specifications. In addition to the standard touring car on view, a smaller model is shown which mounts a particularly neat form of inside driven coupe seating two passengers.

"Natural selection" on the part of the buyer, or, in other words, plain evolution, has been responsible for the development of the Zimmerman car from a high-wheeled, beginning several years ago, to a product of standard proportions and fashionable exterior. The four-cylinder 40 horsepower model, which has a motor of $45\text{-}16 \times 5$ inches, bore and stroke, has a selective change gear, cone clutch, double

jointed shaft drive, internal-external rear wheel brakes and such approved features as engine base lubrication, dual ignition by the Splitdorf system and thermo-syphon cooling. While practically unchanged from last year this chassis now is used for three new models, so-called, which are a roadster, torpedo and five-passenger touring car—all built with closed fronts and in good proportion. For buyers who are in the market for a light and low-priced runabout a much smaller car is produced, equipped with a double-opposed air-cooled engine, which also is on view at the show.

One way to make advantageous use of a small amount of floor space is to change the exhibit daily. This plan being faithfully carried out by the Fal Motor Co., will give opportunity for the display of each of its four styles of stock cars during the week and a veteran racing machine besides, although there is room for but one car to be shown at a time.

Of sundry detail alterations which are revealed in the new models one of the more important is the use of a double jointed

cardan shaft instead of the single jointed member enclosed in a torque tube, that was employed last year. The lower members of the three-quarter elliptic springs now are used to absorb the torsional stresses, but all driving forces are taken care of by radius rods which are mounted outside the springs, as is shown in chain driven cars. Both hub brakes now are of the internal expanding type and the axle is carried on annular ball, instead of roller bearings. The engine now is mounted on a sub frame, a steel filler plate being riveted between it and the main frame sills. For added rigidity also the front ends of the frame members have been joined by a tie rod.

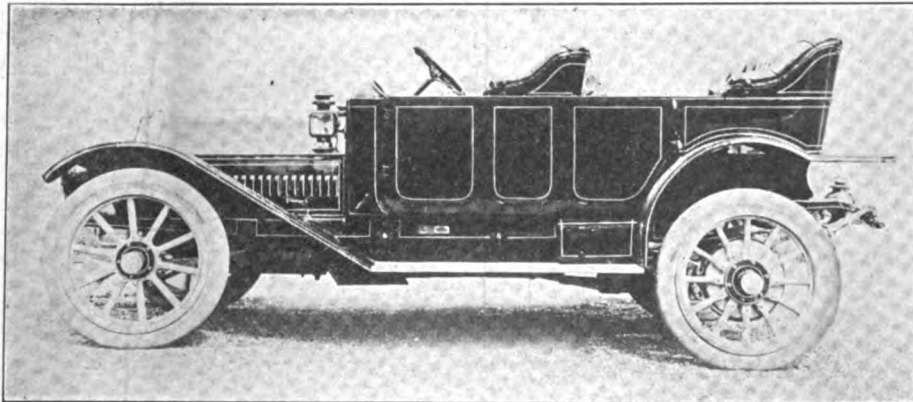
Two styles of chassis are produced nominally, one for touring and the other for runabout and racing bodies. Both are alike, however, save for the springs and the rear axle, which, in the case of the speed models, is of lighter construction and built with a torsion bar which is placed close to the propeller shaft.

Equipped with a huge block motor, said to embody the largest single casting em-

played in the trade today, the latest product of the Middleby Auto Co., now styled the Reading 40, thereby gains some distinction. The cylinder dimensions are 5 x 6

er. In addition, the dividing arm between the seat for the driver and his companion is made in the form of a pocket big enough to conceal the standard tool-roll, while extra

Rutenber engine, formerly used, it is quite novel in one or two respects. Its most radical feature is in the cooling system, which almost may be said to be a combination of the air and water methods, since a certain amount of direct radiation is sought. The water jackets extend down the cylinder only as far as the lowest point of piston travel. Below that point four circular radiating fins are formed integrally with the individual cylinder casting for the purpose of cooling the lower portions of the cylinders and also to provide for uniform expansion at those points. The water intake now is at the base of the jackets instead of on top, the outlet remaining above, as before. A larger exhaust manifold also is employed. The cylinder dimensions are $4\frac{3}{4} \times 5$ inches and the rated output 45 horsepower.

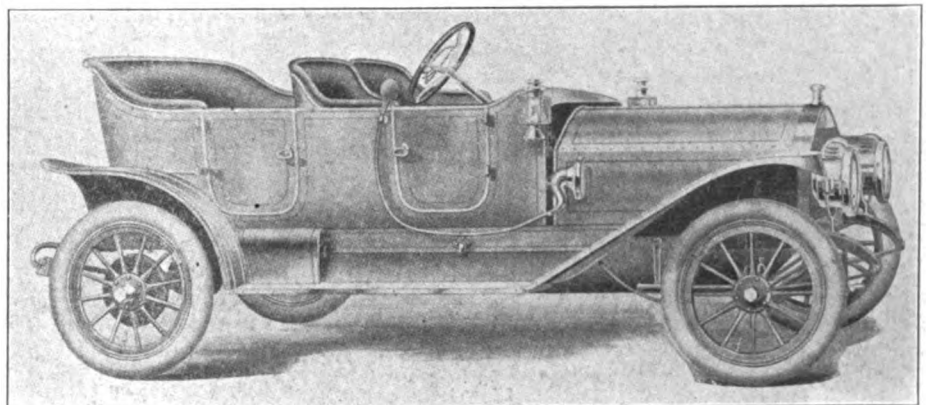


THE NEW GLIDE CLOSED-FRONT TOURING CAR

inches, bore and stroke, the A. L. A. M. rating thus being 40 horsepower. It is of T-head form and has an internal oiling system. Both the motor and gear box are mounted directly on the main frame, which is double-drop in form and a little unusual in that the drops are made in angles, instead of in sweeping curves, as more commonly is the case. Another unusual point in a car of its size, though one by no means unsanctioned by the practice of several well-established makers, is the use of full elliptic springs both front and rear. There also is on view the Middleby car, a type which the same company has produced for several years and which is of air-cooled construction.

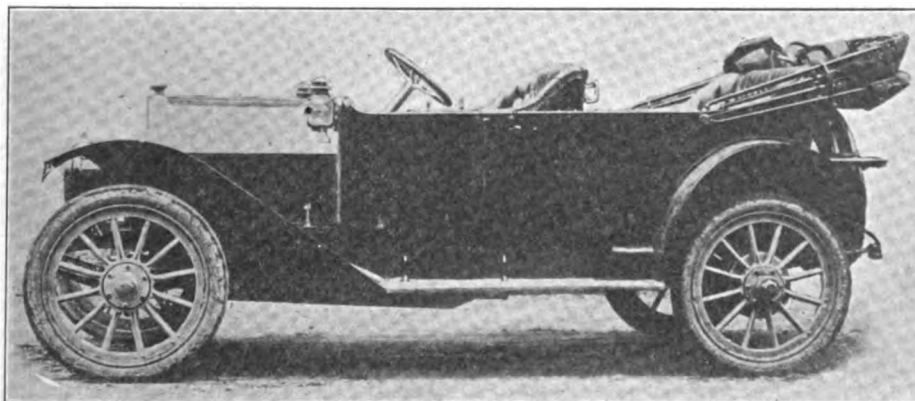
A neat solution of the vexed problem of the clean running board is offered in the new closed-front touring model of the Glide, one of the sturdier and better-known of the cars that are making their first 1911

tool-carrying space and the battery compartment are under the front seat. As the spare tire is carried on the rear of the ton-



THE REPUBLIC CLOSED-FRONT TOURING CAR

neau, the running boards thus are left absolutely free of encumbrance.



THE AMES—ONE OF THE STURDY NEWCOMERS

show appearance in the Coliseum. The car is of the straight dash type and the space inside the panel between the front door and the dash on each side is utilized for storage purposes. On one side the jack is mounted and on the other the tire pump; each being concealed behind a protecting flap of leath-

The principal features of the Glide line, which include a very solid type of full-floating rear axle and change gear combined as a unit, are retained. The motor, however, is new; being built by the Bartholomew Co. in its own shops. But while retaining some of the characteristics of the

Although it has been in the making for about three years and actually on the market for two years, this is the first Chicago show appearance of the Enger car, which

is one of the newcomers that are graced with modern and attractive body construction. The roadster model in particular, which comes regularly equipped with a storm front, in addition to the top and other equipment, is especially attractive from the standpoint of the motorist whose heart's desire is for a "car of some class." It has high side doors, a thin oval fuel tank back of the principal seat and a single rumble in the rear. The closed-front touring model on view also is not without its attractive features, one of them which it shares in common with the roadster being the mounting of the emergency brake and gear-shifting levers in the center of the footboard instead of at the side.

Mechanically the car has a 40 horsepower motor of standard lines, which, with the gearbox, is mounted on a sub-frame, selective change gear, shaft drive construction of the torque tube type with spring drive, drop frame and Eisemann dual ignition. The gearset is of a heavier type than that used last year, the arrangement of the levers being a new feature. The braking system has been improved in detail, and

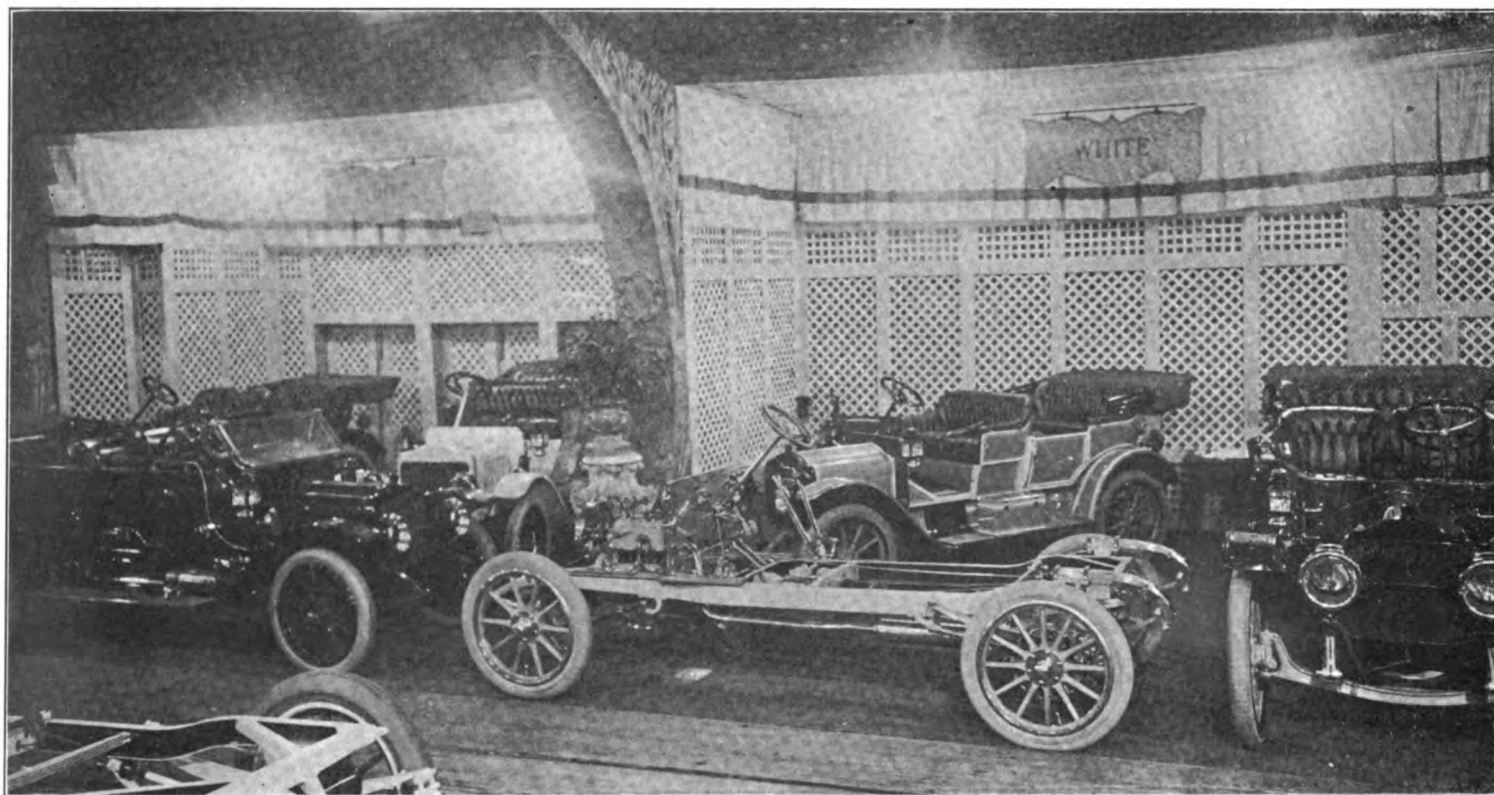
the materials used in the transmission are of higher grade metal than formerly.

Rather a striking car of modish design is the new Ames 40, which, while distributed by the Ames Motor Car Co., of Chicago, was "bred in Old Kentucky," so to speak, which is to say that it is built by the F. A. Ames Co., of Owensboro, in the Blue Grass State which is a large builder of carriages. Two models are made, one of 30 and the other of 40 horsepower, but only the latter is on view at the show.

The exhibition chassis, which is embellished with a plate-glass dashboard, is of

original with the maker of this particular product. The car is made in three sizes, 45, 50 and 60 horsepower being the respective nominal ratings, and has undergone few alterations since last on exhibition. Considerable stress, however, is laid on the improved oiling system, which is so arranged that it is possible to adjust the feed for each of the cylinders individually. This provides considerable economy of oil—an important factor in itself where the consumption of a large car is concerned—and also enables the operator to secure absolutely uniform conditions for all of the cylinders.

comers that has been on the market for a couple of years or more, though not previously exhibited at Chicago, the point is made that it is "built under our own roof"—a point that not all makers of the more recent products can lay claim to. Its general style may be indicated by its maker's boast that it is an "average car," conveying the idea that it strikes a mean between the highest and lowest values of power, weight, wheel base and price. As a matter of fact, however, the effort has been rather more to strike at the requirements of the average motorist rather than to average the specifications of a considerable number of cars.



WHERE THE WHITE GASOLINE AND STEAM CARS ARE ON EXHIBITION IN THE COLISEUM

solid proportions and built with evident strength. It is equipped with an L-head type of motor of $4\frac{1}{8} \times 5\frac{1}{4}$ -inch bore and stroke, with constant level "pump-over" oiling system, Bosch dual ignition and liberal valve and piping arrangements. Transmission is through a leather-faced cone clutch, selective sliding gearset, mounted on a sub-frame and single-jointed propeller shaft, the latter being enclosed in a heavy torque tube which is braced by diagonal struts running from the ends of the axle to the cross-frame member which supports the ball and socket joint, coupling the front end of the torque tube to the frame. The wheelbase is 120 inches, and the standard tire equipment is 36×4 inches with demountable rim mounting.

One of the relatively few exclusively six-cylinder products is the Austin, which otherwise is distinguished by its white and tan finish—a color combination which is

One feature of the car that is in line with modern tendencies is that it is sold fitted out with complete equipment. In addition to the customary items this includes such extras as top, windshield, gas lamps and Prest-O-Lite gas tank, robe rails and an exhaust horn. In addition to the large and small tonneau touring types, the 50 horsepower model is built as a two-passenger runabout. Structurally the line is uniform, save that in the smallest engine the cylinders are cast in pairs, whereas in the other two they are cast individually; and that the change gear of the largest model is fitted with four, instead of three, forward speeds. The chassis are of relatively light construction, considering their power ratings, and are equipped with very large tires, the sizes used on the three respective models being 36×4 , $36 \times 4\frac{1}{2}$ and 37×5 inches.

For the Cino, which is one of the new-

The distinction therefore is an important one.

The chassis is equipped with a $4\frac{3}{8} \times 5$ valve-in-the-head motor, the valves being placed side by side and actuated by the conventional push-rod and rocker arm gear, the cam shaft being of integral construction. The lubricating system is a little out of the ordinary in that the used oil is not returned to the lubricator for re-use, but is allowed to settle in the bottom of the case, where it is drained into the base and prevented from being thrown up by the splash. The lubricator is of the individual pressure-feed type, mounted at the rear of the motor on the left side, and equipped with a sight-feed glass which is mounted on the dash. A reserve supply of oil is carried in a cylindrical tank which is mounted just in front of the lubricator. In connection with the construction of the selective gearset it is noteworthy that in its latest form it is built without a single bolt, nut or cotter pin in-

side the case, the sliding sets being integrally formed and the shafts having integral splines. But one chassis is produced and it is equipped with both roadster and closed front touring bodies.

Several years of development along pretty well standardized lines have resulted in expanding the product of the BCK

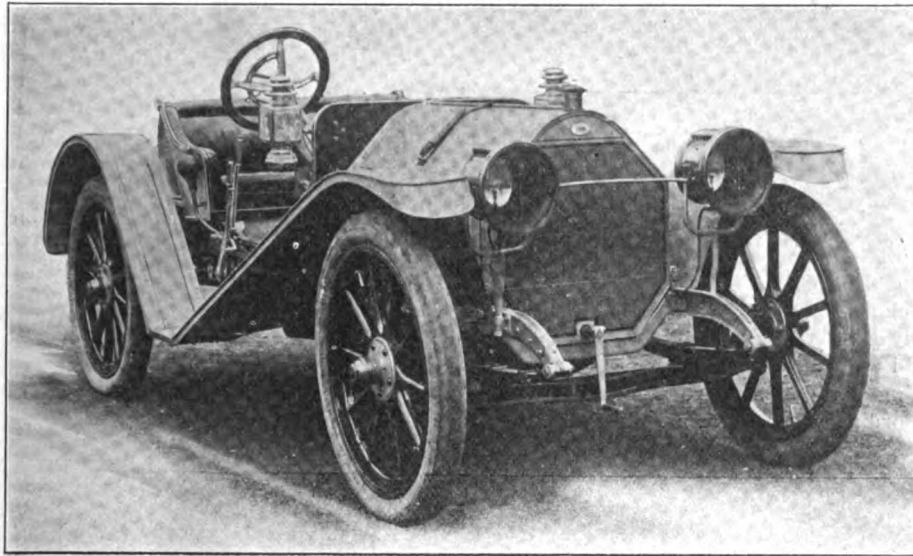
catalogued but are not shown as a part of the Chicago exhibit.

While it is generally known that relatively few automobile builders attempt to produce their own carburetors, the average motorist does not appreciate the fact that the mere testing and selection of the most suitable type from the wide range of types

on the road. The final choice was a special Rayfield carburetor, which differs from the standard patterns in that it has a special dashboard adjustment for the air intake, permitting it to be adjusted by the operator to suit atmospheric conditions, but in other respects operating automatically.

Badger cars are built with an approval form of unit power plant, the cylinders, which are of 4 x 4 inch dimensions, being of the L-type, with valves and manifolds on the left side of the car. The clutch is of the leather-faced cone pattern and the gear-set of the three-speed selective type. The axle, torque tube and brake construction is well made and of good form in general. The wheelbase is 112 inches and the chassis is fitted with 34 x 3½ inch tires. The former specification applies only to the new model D, which is a good-looking five-passenger touring car built with enclosed front along 1911 lines. Additional models produced on a 110-inch wheel base are the standard type of touring car and the roadster, which is of the racing type.

The Westcott is one of the cars that, while making its first show appearance at a national exhibition, already has been in the market for some little time, and has succeeded in rendering a good account of itself, so much so, in fact, that it cannot be considered among the "unknowns" or "also rans." The five and seven-passenger touring equipments on view in the Coliseum basement are nicely designed and

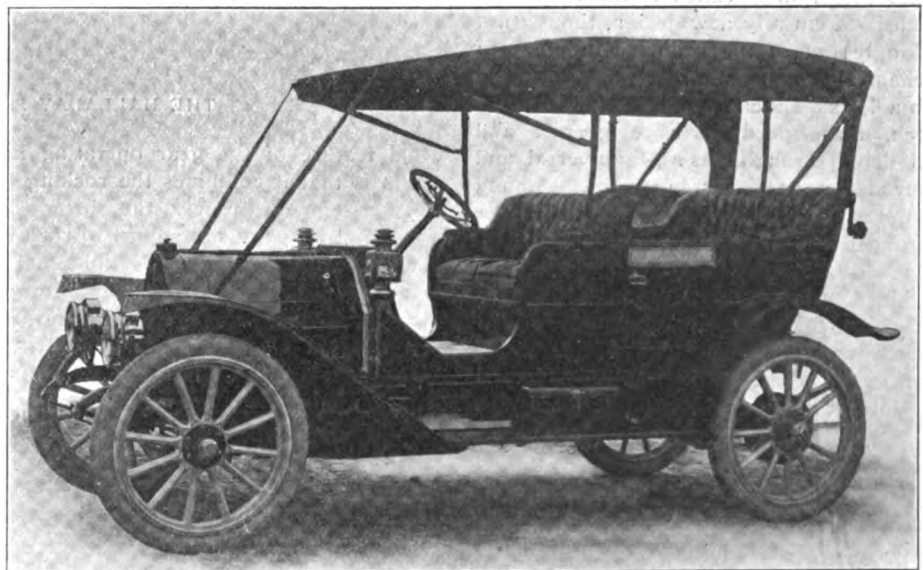


THE NEW STYLE KLINE RACING ROADSTER

Motor Car Co., which is known individually as the Kline car, after its designer, into one of the most varied in the market. It is now composed of no less than 14 models, built on five different chassis, four of which possess the closest similarity of detail. The exception is the 4-24 roadster, which is equipped with a motor of different type from that used in the other models. The engines of the remaining chassis are built with individually cast cylinders which are bolted together from end to end, thus giving the effect of a block motor. In the smallest engine of the line, the cylinders are cast in pairs and are of conventional form in other respects. The new 6-60 and the 6-50 and 4-40 motors are of T-head form, but the new 4-30 is built with L-head cylinders, and is the first of the Kline engines to be made in this way with the valves on opposite sides.

The 60 horsepower chassis is new this year, and is the first of that rating which the company has produced. It is built with a seven-passenger, closed-front touring body and also as a racing type roadster. Five-passenger bodies constructed for the 6-50, 4-40 and 4-30 models are new in design this year, while the last-named machine has a new rear axle in addition to the new type engine already mentioned. The 50, 40 and 30 horsepower machines also are built with small tonneau and two-passenger roadster equipments. A two-cylinder delivery car is an innovation this year, which, however, is not on view this week, while limousine bodies for all the chassis are

that the market affords is a matter of the gravest responsibility to the producer of the car. As a matter of fact not a few instances have been known in which the se-

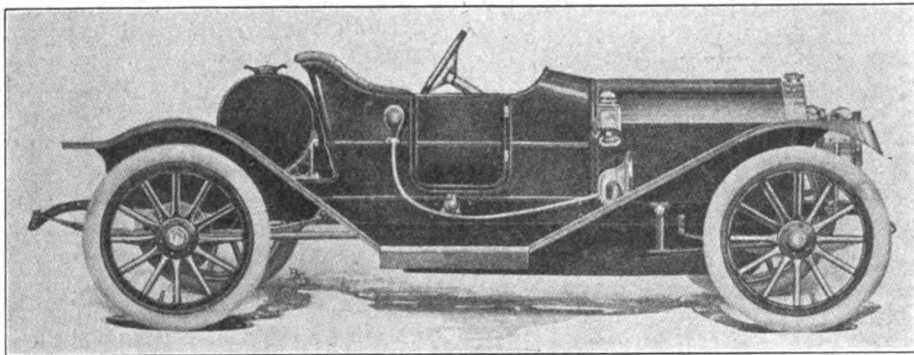


THE BADGER FIVE-PASSENGER TYPE B TOURING CAR

lection of the carburetor actually determined the success of a given model. The point is suggested by the circumstance that the development of the Badger car for the present models has involved a great deal of painstaking work in respect to the gas-producing apparatus with results that are claimed to be really astonishing both as to power, speed range and high-gear capacity

are dignified by a convenient arrangement of the control levers on the inside of the closed fronts.

As compared with the models of last year, a number of improvements have been introduced, such as a larger diameter cone clutch, the adoption of a new style universal joint between the clutch and the selective change gear mechanism, as well

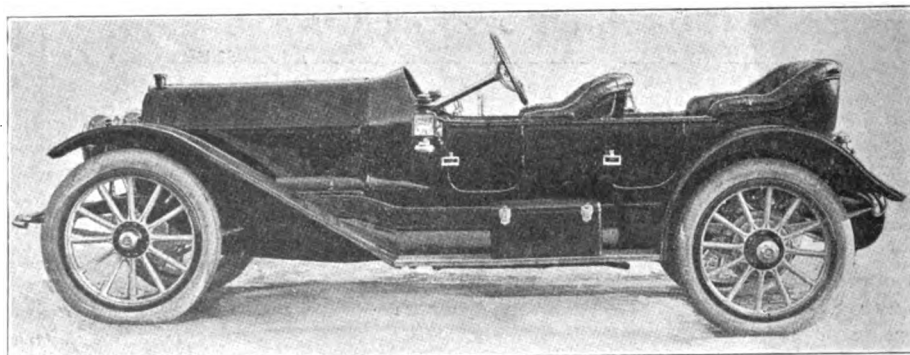


THE WESTCOTT 45-50 TORPEDO ROADSTER

as a new style frame, with narrowed front section and looped rear, to allow for ample axle clearance. Semi-elliptical rear springs now are used, instead of three-quarter elliptic, as formerly, while the adoption of the familiar Timken roller bearing axles involves the elimination of the former torque tube and radius rod construction and the adoption of a V-shaped torsion bar and double universal joints in the propeller shaft. The motor, which is a Rutenber, is of $4\frac{3}{4} \times 5$ -inch cylinder dimensions and rated at 45-50 horsepower. The wheelbase is liberal, being no less than 120 inches, while 36×4 -inch tires are standard specifications.

After several successive annual appearances at Chicago shows, the Halladay line has blossomed forth in several new and improved styles. The motor to which particular attention is called is the new "40," which is of entirely new design, though not strikingly out of the ordinary in point of mechanical construction. It is equipped with a $4\frac{1}{2} \times 5$ Rutenber motor, multiple disk clutch, three-speed selective gearset and final drive through a single universal and heavy torque tube arrangement. Among the noteworthy points in its design may be mentioned the clutch throw-out mechanism which consists of a heavy yoke and arm combined, which is carried across the sub-frame on which the engine and transmission are mounted, and which affords ample leverage together with great rigidity, and the clutch brake, which is of the plain disk

type and arranged to be brought into action only when the clutch disks are fully disengaged. The clutch, it may be observed, is of all-steel construction with 39 disks. A double universal shaft is used between the clutch and gearset, although with the form of sub-frame mounting used there would appear to be small chance of the connecting parts being thrown out of line by any ordinary road strains. Rather an un-



THE HALLADAY 50 FOUR-PASSENGER ROADSTER

usual feature of the gear operating mechanism is that it combines the rocking lever and H-segment types, the lever being pivoted at its point of support to rock in or out in making the gear selections and also being guided by a conventional form of segment to prevent any chance of the operator's going astray in manipulating the gears.

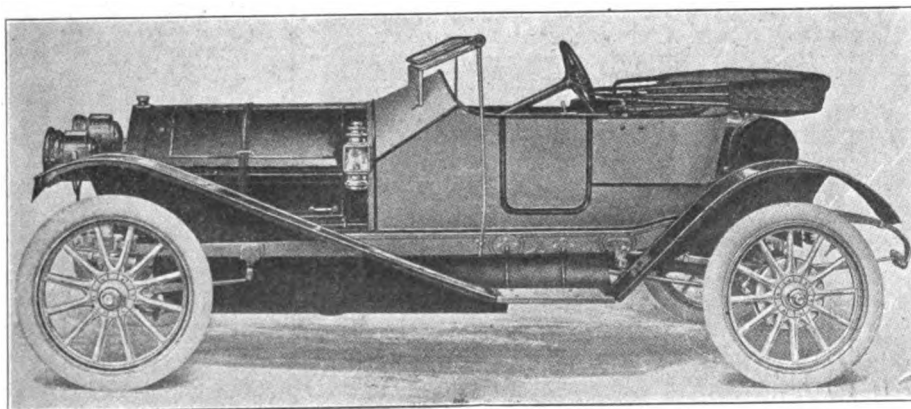
In mounting the axle, which is of the full-

floating type, particular care has been taken to prevent disalignment, the torque tube itself being solidly built, while the radius rods which are used are brought forward diagonally from the axle ends to the cross-frame member which supports the front of the tube in a ball-and-socket joint and given a universal connection. Another good feature is that the brake mechanism is connected throughout to give straight-line tension, considerable thought having been expended also in working out the connection within the drums on the rear wheels. The car is built in the form of a modish torpedo runabout, which, at the show, is displayed in a striking light chrome tint. There also is a second new model of 50 horsepower which has a $4\frac{3}{4} \times 5$ motor, 128-inch wheelbase and $36 \times 4\frac{1}{2}$ -inch tires, which is built in small tonneau and seven-passenger touring forms with closed-front bodies and other modern features.

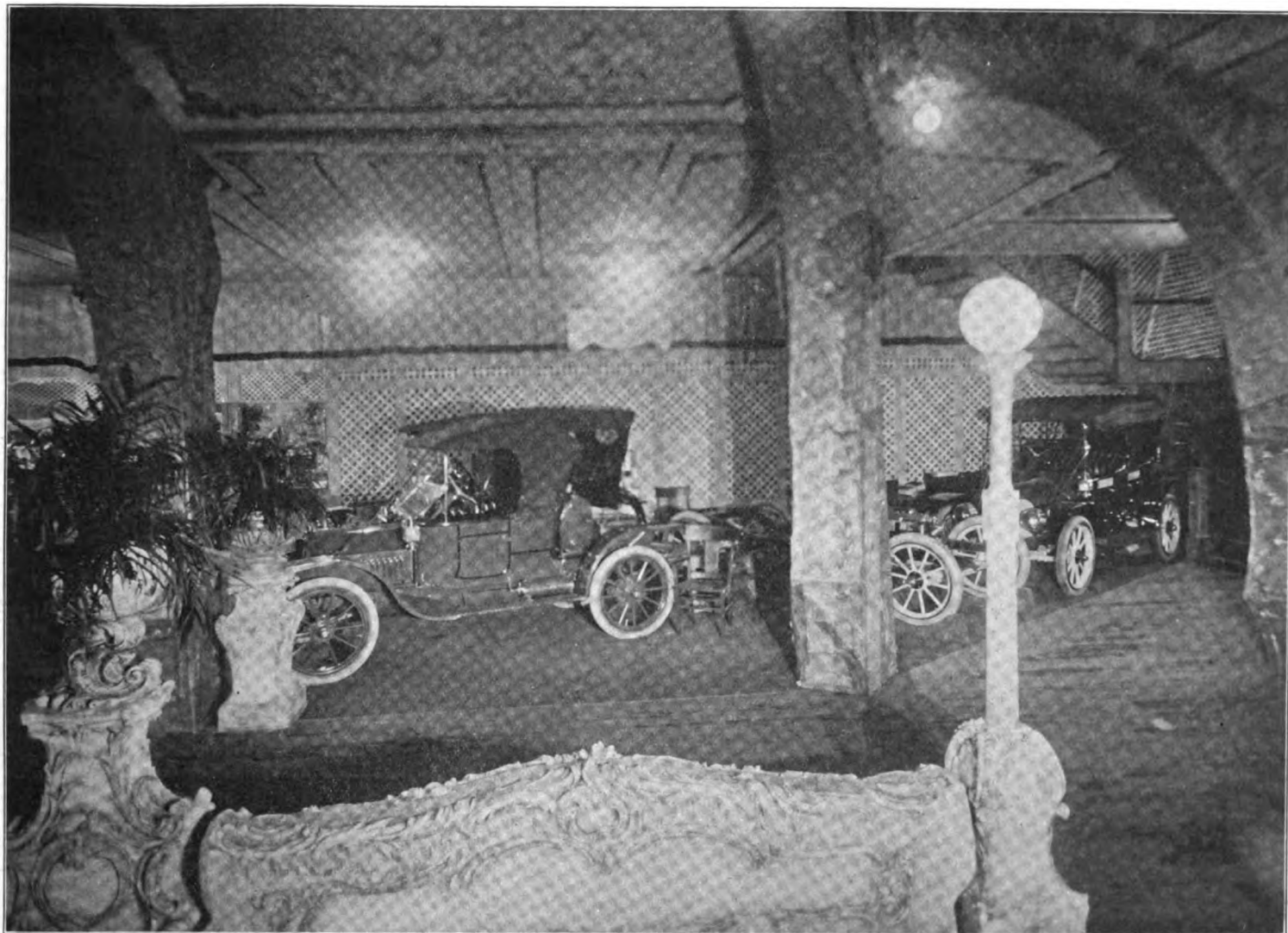
Cutting cars, though not familiar to the seasoned show-goer, have been on the market long enough to have survived the "try-

out" period, and now appear in slightly revised form. The principal alterations that have been introduced since last year, however, are in the nature of new body designs. One entirely new model, so-called, is the A-30 roadster, which is of torpedo form, with seat placed well to the rear and with a round tank behind. It is of 116-inch wheel base and is equipped with $32 \times 3\frac{1}{2}$ inch tires. The engine, which is of the block type, is of $3\frac{3}{4} \times 5$ inches bore and stroke and rated at 30 horsepower (A. L. A. M. rating).

The engine of the B-40 style of chassis is of $4\frac{3}{8} \times 4\frac{1}{2}$ inch dimensions, its cylinders being cast in pairs. The C, D and E 50 models have a 40 horsepower motor of $4\frac{1}{4} \times 5$ inch bore and stroke with individually cast cylinders. The largest chassis of the line is the 60 model, which has a $4\frac{3}{4} \times 5\frac{1}{2}$ inch motor. Selective gearsets are common to all types, while in all but the 60 horsepower models the torque system of propeller shaft construction is employed. For the large cars a double-jointed shaft is used with the torsion rod entirely separate. Wheel bases range from 116 to



THE CUTTING A-30 TWO-PASSENGER ROADSTER



COLISEUM CORNER IN WHICH THE EVERITT CARS ARE EFFECTIVELY ARRANGED

122 inches and tire sizes from 32 x 3½ to 36 x 4.

This show marks the first appearance of the new American-built Fiat car, and while the 35 horsepower car therefore may be considered as a new product, it is explained that the output of the factory at Poughkeepsie, N. Y., differs in no material respect from that of the parent establishment at Turin, Italy. As a result, the display is not distinctly a new one. The chassis is noteworthy, however, for its clean construction, particularly with respect to the block motor, which is built with absolutely no visible working parts. The engine further is remarkable as being of the long-stroke type, its cylinders being of 110 x 150 millimeters dimension, or roughly, 4 1/8 x 6 inches, bore and stroke. The use of a four-speed change gear on a car of such moderate power is another feature worth mentioning.

So that the "poor man's car" be not wholly neglected the Kenmore Manufacturing Co., a Chicago concern, is showing a light type of runabout equipped with a

double opposed motor, planetary change gear and shaft drive, which sells for \$575. To those who favor the solid tire, the price is proportionately lower, while without the rumble box in the rear, it is as low as \$500. Equipped with a larger motor, but one of the same type, and otherwise the same in general construction but of somewhat more ample proportions throughout, is a second model of 16 horsepower, which is shown in the form of a runabout with a detachable rear seat, which its maker terms a tourabout. A larger and more pretentious machine is the 30 horsepower touring car, which has a block motor, selective control, shaft drive, dual ignition and other up-to-date specifications, and which is made to sell for \$1,300.

One of the several carriage building concerns that have come into the automobile field and remained through the stresses of the early years of competition is the Schacht Automobile Co., which owes its parentage to the carriage industry, though no hint of that fact remains in its present name. Schacht cars at the present time are far more pretentious than ever before, being,

indeed, exhibited for the first time equipped with four cylinder motors. The opposed type of engine is retained for the smaller delivery model made, but the standard pleasure chassis has a vertical block motor of neat construction, three-speed selective change gear and shaft drive.

The motor, which is of 5.5-16 x 5 inches cylinder dimensions, is rated at 40 horsepower. An unusual feature of its equipment is that it is provided with magneto ignition only, the style of instrument used being one in which the intensity of the spark is uniform for all positions of advance or retard. When equipped as a roadster the chassis has 110 inch wheel base; for the touring equipment, which is a shapely one of the open-front type and capable of accommodating either five or seven passengers, 120 inch base is required.

One of the few sectioned magnetos at the show is a Remy, which is exhibited in its regular mounting on the moving chassis model which comprises the display of the Great Western Automobile Co., whose product has been time tried and well tested. The advantage of the arrangement is that

it not only discloses the construction of the magneto but also affords opportunity to the studiously inclined to investigate the entire relationship between the movements of the armature and timer and those of the pistons and valves of the engine respectively. In which connection it should be explained that the cylinder castings of the engine are cut away in such a fashion as to give a good illustration of the interior construction of the entire machine and its moving parts.

result of this arrangement is to give a remarkably free exhaust and a clean running engine. This effect is heightened by the use of a tapering exhaust manifold, which is shaped a little differently this year than last, to afford ample clearance for the magneto. To provide adequate cooling for the upper part of the cylinder, the water jackets are tapered, being of considerably larger cross-sectional area at the top than at the bottom. Another structural feature that may be mentioned is the machining of the

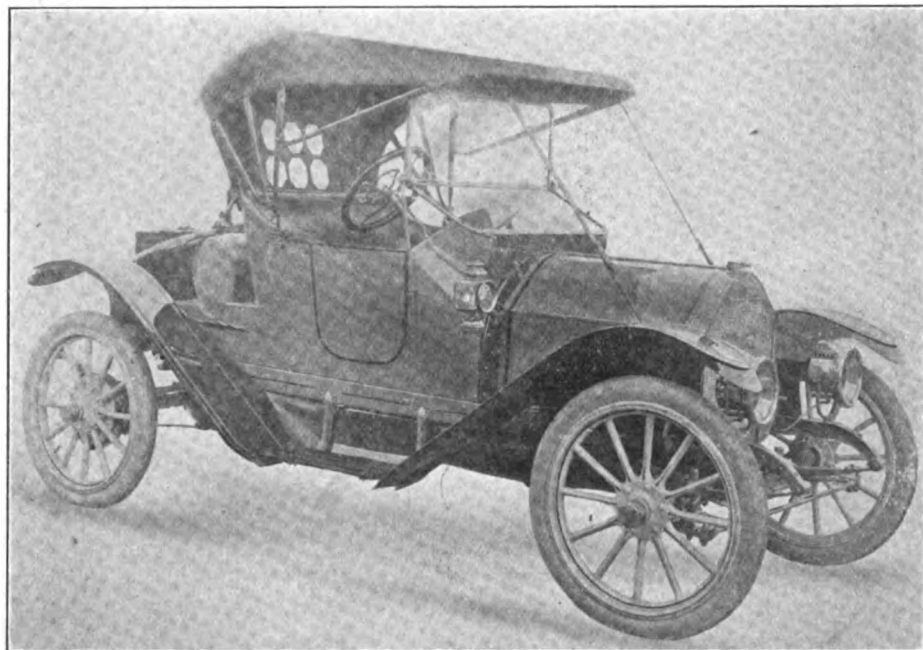
means of floating disks instead of sliding or pressure fingers.

The transmission system also is decidedly original and well worked out mechanically, its construction being such that no universal joints are used in the direct line of transmission. The axle and torsion tube are built in unit form, the front end of the latter being mounted in a ball and socket joint which is carried by a downwardly arched cross-frame member. The motor, which is of the series type, is mounted immediately above the torque tube, and is rigidly attached to it by a sort of cradle the speed reduction being obtained by an enclosed silent chain. Thus the motor partakes of any rocking motion which may be imparted to the propeller shaft enclosing tube as a result of spring movement. The car is expensively made, having annular ball bearings throughout and a double-drop frame. Rather a neat touch in the arrangement of the coupe body is the placing of the volt-ammeter instrument case in the fore part of the roof, where it is easily read and not in danger of being trod upon by a thoughtless passenger or in some other way unintentionally damaged.

By way of encouragement to those whose faith in the electric vehicle enables them to regard it as a full-fledged touring car, the Babcock Electric Carriage Co. has brought out a five-passenger machine modelled on the exact pattern of a gasoline touring car and equipped with a modish straight-line, closed-front body, with top, windshield and large headlights. While not recommended for unlimited touring purposes, its construction is such as to render it suitable for short runs or for genuine touring where charging facilities are to be counted on.

Mechanically, the most original feature of the Babcock product is the controller arrangement, which is provided with a combined brake and emergency cut-out pedal arrangement. The system is so arranged that when the car has been stopped by means of the pedal alone, it may be restarted merely by allowing the pedal to return to its normal position slowly. In addition to the touring car, a two-passenger runabout of the gasoline type is shown, as well as a coupe and a victoria of more conventional pattern.

The use of a special form of platform suspension for the front end of the chassis is one of the characteristic features of the Woods electrics, which are made in Chicago, and therefore are of wide local repute. The side members of the front suspension ordinarily would be termed three-quarter elliptic, the difference in this case being that instead of being shackled to the frame, the rear ends of the lower sides of the springs are shackled to a cross member, also of semi-elliptic pattern, which thus equalizes the load between the two sides.



GREAT WESTERN TWO-PASSENGER ROADSTER

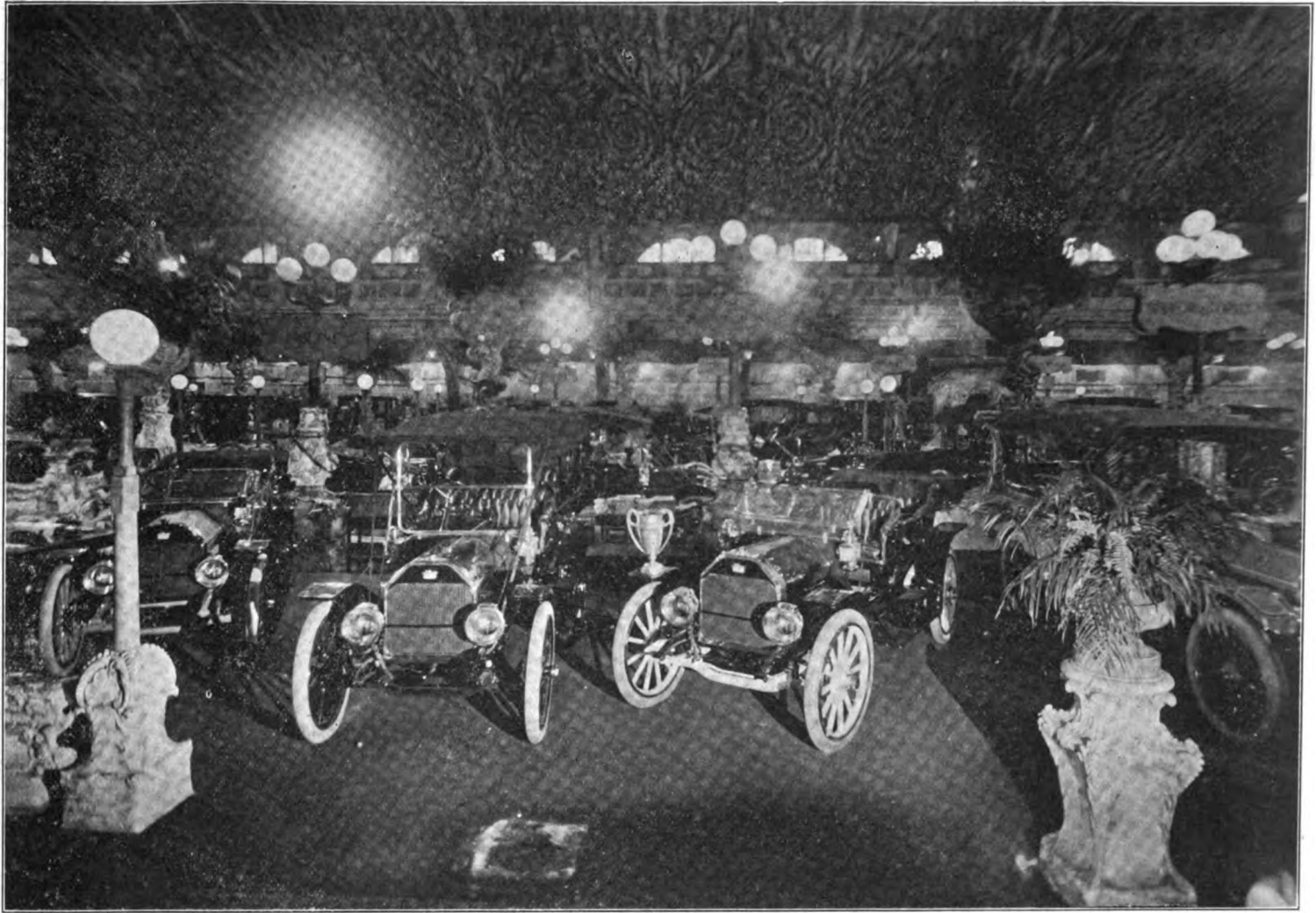
The Great Western engine, which possesses a number of original features, remains much the same in form as in the past. Its cylinder dimensions are $4\frac{1}{4} \times 5$ inches, and it is rated at 40 horsepower. The inlet valves are in offset pockets on the side, while the exhausts are mounted in the head and actuated by rocker arms. The

entire interior of the cylinders to reduce the friction of the gas and also to prevent carbonization. A cone clutch, selective gearset and shaft drive comprise the transmission system. Five different styles of body are produced, including closed-front touring and torpedo patterns, all of which are new.

The Electric Cars in Evidence at Chicago

The electric vehicle at this time is passing through that stage of its development in which, owing principally to the increasing adoption of the shaft drive, the manufacturers are experiencing a renewed rivalry on the basis of mechanical construction. But it is safe to say that none of the cars on view at Chicago possesses more points of originality than does the Ohio, which is being exhibited for the first time, although it is not, strictly speaking, a brand-new product. Perhaps its most radical feature may be considered the control system, which involves an adaptation of the "remote control" principle, familiar in the electrical industry. The controller proper consists merely of a small knob mounted on top of the steering column, which may be rotated through several positions to give

three forward speeds, the resistance to movement of the knob being so slight that it may be turned with the thumb and finger. A fourth or "shunt" speed, corresponding, in a way, to the direct drive on a gasoline car, is obtained by operating a push button in the floor. Two sets of internal expanding brakes on the rear wheels, which are pedal actuated, complete the control system. The knob itself serves merely to switch a light pilot current through a set of solenoid disk switches or contactors, which are located under the body of the car, and which constitute the real controller of the current which actuates the vehicle. The Dodge magnetic controller, as it is called, is original with the manufacturer, and is radical in electric vehicle construction in that it secures contact by



LOOKING ACROSS THE COLISEUM FROM THE MOLINE EXHIBIT

The rear suspension is by the more conventional full elliptic springs.

The motor is placed within the body and close to the controller, short and simple wiring being the result, while transmission is through a counter shaft, with herringbone reduction gears and side chains to the wheels. None of the features are new at this time, the Woods policy being to maintain its styles with as little change as possible. The body designs have been brought up to date where necessary, of course, while, as is generally the case with the electric vehicle makers, the purchaser is permitted to invest in the Edison battery when so disposed, although the lead battery is used as standard equipment.

In connection with the growing use of shaft drive on electric vehicles, the Baker Motor Vehicle Co. derives a certain sort of pride from the fact that its own system now is in its second year of service, its first having been survived without the necessity arising of making any changes. The system involves a reduction drive from the motor, which is placed in the waist of the chassis and a little to one side of the longitudinal center, to the propeller shaft, the

Renold silent chain being employed for the purpose. The propeller shaft itself is fitted with two universal joints, both torsional and traction stresses being taken up by the full elliptic rear springs, which are mounted in an original fashion.

In general the details of the complete vehicles remain practically unchanged from last year. One innovation which is of effect in improving the appearance of the coupe models in particular, however, is the extension of the fenders over the wheels, much in the manner which is common to gasoline cars. This change also has the effect of rendering the cars a little cleaner when used in wet weather. Another change, which is calculated to appeal to the operator more particularly, is the cutting away of the cushion on the left side in such a way as to afford better clearance for the elbow in operating the controller.

Characterized by a wider range of option than ordinarily is found in electric vehicles, the Rauch & Lang line, which is built for stanhope, victoria and coupe body equipments, is offered this year with a number of improvements over former styles. Besides introducing annular ball bearings at

a number of points in the chassis at which they have not been used before, making several other changes in the details of construction and increasing the wheelbase of the standard chassis to 86 inches, the most important development in the chain-driven models is the adoption of a new form of chain housing and radius rod construction. The chains and sprockets are completely encased in a housing which affords a separate tubular enclosure for the upper and lower sides of the chain, the radius rods being neat steel castings of trussed, triangular form, and so mounted as to relieve the chaincase of all strain. In the design of the controller, which is another original mechanical detail, provision is made not only to lock the lever when the car is to be left unattended, but also for breaking the circuit automatically so that starting is rendered impossible even should an attempt be made to make contact across the controller.

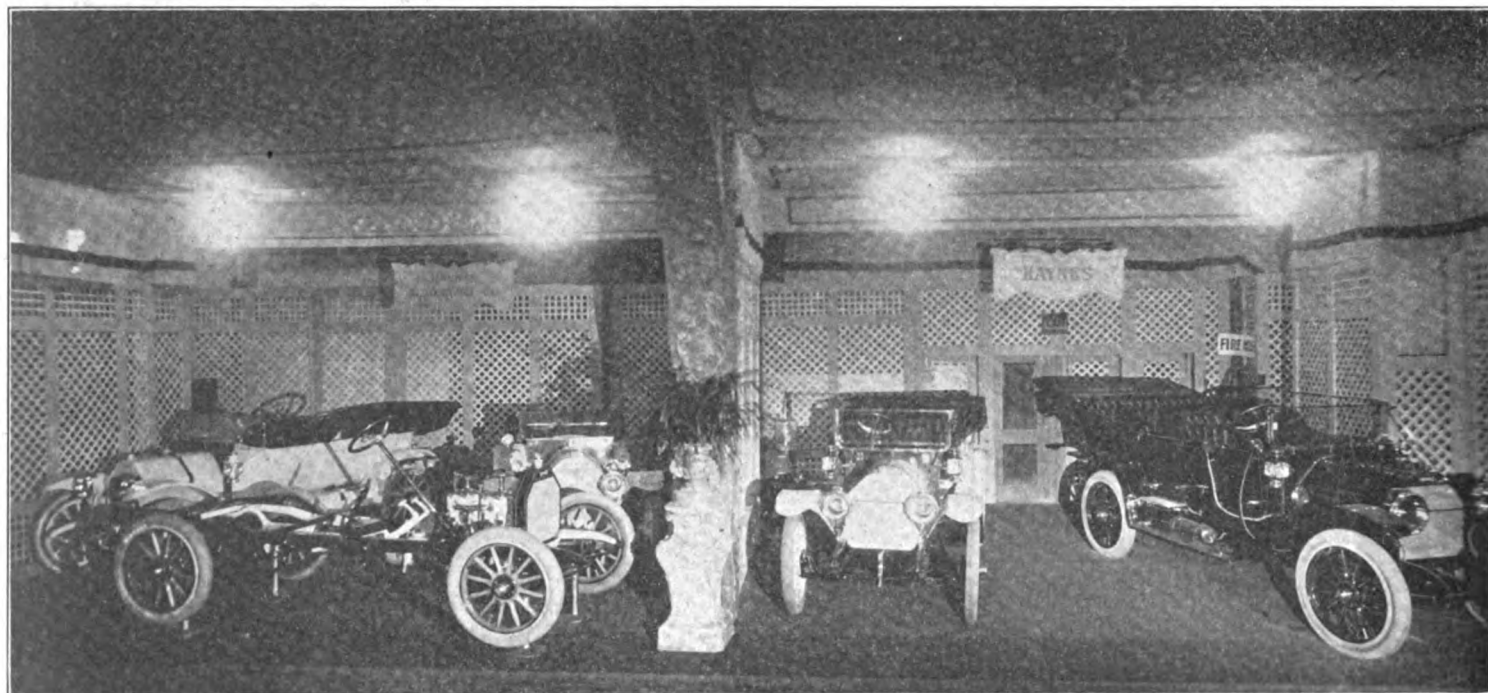
Pursuant to its policy of allowing the purchaser the widest possible option, the Rauch & Lang Carriage Co. also produces a shaft-driven chassis, while further choice is offered in the way of battery equipment, the Edison battery being the only

one on which an increase in price is required. There also is ample option in the matter of tires, either solid or pneumatic types being available.

Another of the electric vehicles which have not been exhibited at any of the former shows, though not absolutely new on the market, is the Broc, which is constructed by a company whose early experience was gained in the building and

repairing of electrics for other concerns. In general it is of standard proportions, but special claim is made for its light weight and endurance on the score of its vanadium steel axles, the use of ball bearings throughout and the general application of approved structural materials. Its control, while of the familiar lever type, has been simplified by the elimination of all attachments, such as might be likely to cause confusion to the novice operator,

while its construction is such as to render it impossible inadvertently to get through the neutral position and into the reverse. The same style of chassis is employed for all bodies, and the latter, besides being nicely finished and equipped, have the advantage that all windows are of the drop pattern, so that the enclosed models may be rendered practically open, making the car adaptable not only for cold but also for warm weather use.



LATTICE DECORATIONS UNDER THE BALCONY—SETTING OFF THE HAYNES EXHIBIT

Summary of the Cars that are Staged at the Chicago Show

Alden Sampson Co., Detroit, Mich.—One Alden Sampson four cylinder, closed front touring car and one chassis.
 American Locomotive Co., Providence, R. I.—Four Alco cars. One each four cylinder open touring car and limousine, one six cylinder open touring car, one racing car and one chassis.
 American Motor Car Co., Indianapolis, Ind.—Four American four cylinder cars. Two closed front small tonneau touring cars and one each closed front touring car, runabout and chassis.
 Ames Motor Car Co., Chicago, Ill.—Two Ames four cylinder, closed front touring cars and one chassis.
 Anderson Electric Carriage Co., Detroit, Mich.—Four Anderson electric cars. Three coupes, one closed front runabout and one chassis.
 Atlas Motor Car Co., Springfield, Mass.—Three Atlas two cylinder, two cycle cars. One each closed front touring, torpedo, landaulet and chassis.
 Auburn Automobile Co., Auburn, Ind.—Three Auburn four cylinder cars. One closed front touring car and two open touring cars.

Austin Automobile Co., Grand Rapids, Mich.—Three Austin six cylinder cars. Two closed front touring cars and one small tonneau closed front touring car.
 Babcock Electric Carriage Co., Buffalo, N. Y.—Four Babcock electric cars. One each closed front touring car, coupe, runabout and victoria.
 Badger Motor Car Co., Columbus, Wis.—Three Badger four cylinder cars. One each open touring, closed front touring and runabout.
 Baker Motor Vehicle Co., Cleveland, Ohio—Four Baker electric cars. Three coupes, one victoria and one chassis.
 Bartholomew Co., Peoria, Ill.—Three Glide four cylinder, closed front touring cars and one chassis.
 Benz Auto Import Co., New York City—Two Benz four cylinder cars. One each closed front touring car and limousine.
 B. C. K. Motor Car Co., York, Pa.—Three Kline four cylinder cars. Two closed front touring cars and one roadster.
 Broc Electric Vehicle Co., Cleveland, Ohio—Four Broc electric coupes.
 Brush Runabout Co., Detroit, Mich.—Three

Brush single cylinder cars. Two runabout, one coupe and one chassis.
 Buckeye Mfg. Co., Anderson, Ind.—Four Lambert four cylinder cars. One each open runabout and touring car and two closed front touring cars (one small tonneau).
 Buick Motor Co., Flint, Mich.—Four Buick four cylinder cars. Two closed front touring cars, one open touring car, one roadster and one chassis.
 Cadillac Motor Car Co., Detroit, Mich.—Four Cadillac four cylinder cars. One open touring car, one limousine, two closed front touring cars and one chassis.
 Cartercar Co., Pontiac, Mich.—Three Carter four cylinder cars. One each small tonneau touring car, closed front touring car, closed front runabout and one chassis.
 Chadwick Engineering Works, Pottstown, Pa.—Two Chadwick six cylinder cars. One each open touring car and runabout and one chassis.
 Chalmers Motor Co., Detroit, Mich.—Four Chalmers-Detroit four cylinder cars. Two closed front touring cars, one limousine, one runabout and two chassis.

Clarke-Carter Automobile Co.—Three Cutting four cylinder cars. Two closed front touring cars and one closed front runabout.

Colby Motor Co., Mason City, Ia.—One Colby four cylinder, closed front touring car and one chassis.

Cole Motor Car Co., Indianapolis, Ind.—Two Cole "30" four cylinder cars. Two closed front touring cars and one chassis.

Columbia Motor Car Co., Hartford, Conn.—Four Columbia four cylinder cars. Two closed front touring cars, one torpedo, one roadster and one chassis.

Corbin Motor Vehicle Corporation, New Britain, Conn.—Four Corbin four cylinder cars. Two closed front touring cars, one torpedo, one runabout and one chassis.

Courier Car Co., Dayton, Ohio—Three Courier four cylinder cars. Two closed front touring cars and one closed front runabout.

Crow Motor Car Co., Elkhart, Ind.—Four Crow four cylinder cars. One each open touring, closed front touring, small tonneau closed front touring and closed front runabout.

Dayton Motor Car Co., Dayton, Ohio—Five Stoddard-Dayton four cylinder cars. Two closed front touring cars and one each small tonneau touring car, limousine and enclosed limousine.

Diamond T Motor Car Co., Chicago, Ill.—Two Diamond T four cylinder cars. One each touring car and coupe.

Dorris Motor Car Co., St. Louis, Mo.—Two Dorris four cylinder cars. One each closed front touring car and limousine and one chassis.

Elmore Mfg. Co., Clyde, Ohio—Four Elmore four cylinder, two cycle cars. Two closed front touring cars, one open touring car, one roadster and two chassis.

E-M-F Co., Detroit, Mich.—Six E-M-F four cylinder cars. Two runabouts and one each coupe, open touring car, roadster and small tonneau touring car.

Enger Motor Car Co., Cincinnati, Ohio—Two Enger four cylinder cars. One each closed front touring car and closed front runabout and chassis.

Fal Motor Co., Chicago, Ill.—One Fal four cylinder closed front touring car.

Fiat Auto Co., Poughkeepsie, N. Y.—Two Fiat four cylinder cars. One each limousine, closed front touring car and chassis.

Franklin Mfg. Co., H. H., Syracuse, N. Y.—Five Franklin air cooled cars. Two six cylinder closed front touring cars, two four cylinder roadsters, and one four cylinder, closed front touring car.

Garford Co., Elyria, Ohio—One Great Western four cylinder chassis.

Haberer & Co., Cincinnati, Ohio—Three Cino four cylinder cars. Two closed front touring cars and one roadster.

Haynes Automobile Co., Kokomo, Ind.—Four Haynes four cylinder cars. Two

closed front touring cars, one each open touring car and roadster and one chassis.

Hudson Motor Co., Detroit, Mich.—Four Hudson four cylinder cars. Two roadsters and one each open and closed front touring cars and one chassis.

Hupp Motor Car Co., Detroit, Mich.—Four Hupmobile four cylinder cars. One each closed front touring car, coupe, two closed front runabouts and one chassis.

Hupp-Yeats Electric Car Co., Detroit,

CENSUS OF THE SHOW.

Total Exhibitors	292
Exhibitors of Cars	98
Exhibitors of Motorcycles	18
Exhibitors of Accessories	176

GASOLENE CARS.

Gasolene:	
One Cylinder	3
Two Cylinder	4
Two Cylinder (2 cycle)	2
Four Cylinder	237
Four Cylinder (2 cycle)	7
Six Cylinder	29
Steam	1
Electric	34

Total Pleasure Cars

Landulet	3
Touring (open)	28
Touring (closed)	150
Touring (small tonneau)	14
Runabout (open)	23
Runabout (closed)	33
Coupe	6
Racing Type	3
Limousine	17
Double Limousine	5
Victoria Phaeton	1

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Air Cooled Cars

Water Cooled Cars

CHASSIS.

One Cylinder	1
Two Cylinder (2 cycle)	1
Four Cylinder	49
Four Cylinder (2 cycle)	3
Six Cylinder	7
Electric	5
Total Chassis	66

Mich.—Two Hupp-Yeats electric coupes and one chassis.

Inter-State Automobile Co., Muncie, Ind.—Four Inter-State four cylinder cars. One open touring car, three closed front touring cars and one chassis.

Jackson Automobile Co., Jackson, Mich.—Four Jackson four cylinder cars. Three closed front touring cars (one small tonneau) and one roadster.

Jeffery Co., Thomas B., Kenosha, Wis.—Four Rambler four cylinder cars. Three closed front touring cars and one each coupe and chassis.

Kenmore Mfg. Co., Chicago, Ill.—Three

Kenmore cars. One each two cylinder roadster and runabout and one four cylinder closed front touring car.

Kissel Motor Car Co., Hartford, Wis.—Three Kissel four cylinder cars. One open touring car, two closed front touring cars and one chassis.

Knox Automobile Co., Springfield, Mass.—Five Knox cars. Two six cylinder torpedoes, and three four cylinder, closed front touring cars.

Lexington Motor Car Co., Connersville, Ind.—Two Lexington four cylinder cars. One each closed front touring car and roadster.

Locomobile Co. of America, Bridgeport, Conn.—Three Locomobile cars. One six cylinder closed front touring car and one each four cylinder closed front touring and small tonneau touring and one chassis.

Lozier Motor Co., Plattsburg, N. Y.—Four Lozier cars. One each four cylinder limousine, closed front touring car and racing car, one six cylinder torpedo and one chassis.

Matheson Motor Car Co., Wilkes-Barre, Pa.—Three Matheson six cylinder cars. One each open touring car, closed front touring car and limousine.

Maxwell-Briscoe Motor Co., Tarrytown, N. Y.—Five Maxwell cars. Three four cylinder closed front touring cars, two runabouts, one closed front runabout, one two cylinder runabout and one chassis.

McIntyre Co., Auburn, Ind.—Three McIntyre four cylinder cars. One each closed front touring car and runabout and one closed front small tonneau touring car.

Metzger Motor Car Co., Detroit, Mich.—Three Everitt four cylinder cars. Two closed front touring cars, one roadster and one chassis.

Middleby Auto Co., Reading, Pa.—Three Reading four cylinder cars. One air cooled open touring car, two closed front water cooled roadsters and one chassis.

Midland Motor Co., Moline, Ill.—One Midland four cylinder closed front touring car and one chassis.

Mitchell-Lewis Motor Co., Racine, Wis.—Four Mitchell cars. One six cylinder closed front touring car, and one each four cylinder roadster, surrey and closed front touring car and one chassis.

Moline Automobile Co., East Moline, Ill.—Three Moline four cylinder cars. One each open and closed front and small tonneau touring cars.

Moon Motor Car Co., St. Louis, Mo.—Three Moon four cylinder cars. Three closed front touring cars (one small tonneau) and one chassis.

National Motor Vehicle Co., Indianapolis, Ind.—Four National four cylinder cars. One each enclosed limousine and runabout and two closed front touring cars.

Nordyke & Marmon Co., Indianapolis, Ind.—Three Marmon four cylinder cars. Two



GENERAL VIEW OF THE COLISEUM, FRANKLIN CARS IN THE FOREGROUND

- closed front touring cars, one racing car and one chassis.
- Ohio Electric Car Co., Toledo, Ohio—Two Ohio electric coupes and one chassis.
- Ohio Motor Car Co., Cincinnati, Ohio—Three Ohio four cylinder cars. One each open touring car, closed front touring car and closed front small tonneau touring car and one chassis.
- Olds Motor Works, Lansing, Mich.—Five Oldsmobiles. One six cylinder closed front touring car. Two four cylinder closed front touring cars, and one each closed front runabout and closed front small tonneau touring car.
- Otto Gas Engine Works, Philadelphia, Pa.—Two Otto four cylinder cars. One closed front touring car, one roadster and one chassis.
- Packard Motor Car Co., Detroit, Mich.—Four Packard four cylinder cars. Two closed front touring cars, one coupe and one enclosed limousine.
- Peerless Motor Car Co., Cleveland, Ohio—Three Peerless four cylinder cars. Two limousines, one landaulet and one chassis.
- Pierce-Arrow Motor Car Co., Buffalo, N. Y.—Three Pierce-Arrow six cylinder cars. Two closed front touring cars, one landaulet and one chassis.
- Pierce Motor Co., Racine, Wis.—Three Case four cylinder cars. One open small tonneau touring car, two closed front touring cars and one chassis.
- Pope Mfg. Co., Hartford, Conn.—Four Pope-Hartford cars. One six cylinder closed front touring car, and one each four cylinder closed front touring, small tonneau touring and limousine and one chassis.
- Premier Motor Mfg. Co., Indianapolis, Ind.—Three Premier four cylinder cars. Two closed front touring cars, one torpedo and one chassis.
- Pullman Motor Car Co., York, Pa.—Four Pullman four cylinder cars. Three closed front touring cars and one closed front runabout.
- Rauch & Lang Carriage Co., Cleveland, Ohio—Three Rauch & Lang electric coupes and one chassis.
- Reo Motor Car Co., Lansing, Mich.—Four Reo four cylinder cars and one Owen four cylinder closed front touring car. One each Reo runabout, closed front runabout, closed front touring car and open touring car.
- Republic Motor Car Co., Hamilton, Ohio—Two Republic four cylinder cars. One closed front touring car, one roadster and one chassis.
- Royal Tourist Car Co., Cleveland, Ohio—Three Royal Tourist four cylinder cars. One open touring car and two closed front touring cars.
- Schacht Motor Car Co., Cincinnati, Ohio—Two Schacht four cylinder cars. One each open touring car and runabout and one chassis.
- Selden Motor Vehicle Co., Rochester, N. Y.—Three Selden four cylinder cars. One

open touring car, two closed front touring cars and one chassis.
 Simplex Motor Car Co., Mishawaka, Ind.—Two Amplex four cylinder, two cycle, closed front touring cars and one chassis.
 Speedwell Motor Car Co., Dayton, Ohio—Three Speedwell four cylinder cars. Two closed front touring cars (one small tonneau), one closed front runabout and one chassis.
 Staver Carriage Co., Chicago, Ill.—Two Staver-Chicago four cylinder cars. One closed front touring car, one closed front runabout and one chassis.
 Stearns Co., F. B., Cleveland, Ohio—Six Stearns four cylinder cars. Three closed front touring cars, one small tonneau closed front touring car, one victoria-phaeton, one coupe and one chassis.
 Stevens-Duryea Co., Chicopee Falls, Mass.—Four Stevens-Duryea six cylinder cars. Three closed front touring cars, one enclosed limousine and one chassis.

Streator Motor Carriage Co., Streator, Ill.—Five Halladay four cylinder cars. Three closed front touring cars, one closed front runabout, one open touring car and one chassis.
 Studebaker Bros. Mfg. Co., South Bend, Ind.—Four Studebaker cars. One each electric coupe and victoria. One each four cylinder, gasoline, closed front touring and limousine.
 Thomas Motor Co., E. R., Buffalo, N. Y.—Five Thomas cars. One six cylinder closed front touring car, two four cylinder closed front touring cars and one each four cylinder open touring car and limousine.
 Waverley Co., Indianapolis, Ind.—Five Waverley electric cars. Three coupes, one each runabout and victoria.
 Westcott Motor Car Co., Indianapolis, Ind.—Two Westcott four cylinder cars. Two closed front touring cars and one chassis.

White Co., Cleveland, Ohio—Five White four cylinder gasoline cars and one White steam car. One steam touring car and one each gasoline limousine, open touring car and small tonneau touring, two closed front touring cars and one chassis.
 Willys-Overland Co., Toledo, Ohio—Four Overland four cylinder cars and one Marion four cylinder roadster. Three Overland closed front touring cars, one roadster and one chassis.
 Winton Motor Carriage Co., Cleveland, Ohio—Four Winton six cylinder cars. One each enclosed limousine and closed front touring car, two torpedoes and one chassis.
 Woods Motor Vehicle Co., Chicago, Ill.—Five Woods electric coupes.
 Zimmerman Mfg. Co., Auburn, Ind.—Three Zimmerman four cylinder cars and one two cylinder air cooled runabout. One each four cylinder open and closed front touring and closed front roadster.

Parts and Accessories that Were Not Displayed at Other Shows

While Chicago's wide open show naturally outnumbered the licensed show in New York in respect to the number of car manufacturers and the number of cars exhibited, the New York function was such a whaling big affair in respect to exhibits of materials and accessories that the "balance of power," so to speak, was in favor of New York. This is to say that while there are 98 exhibits of cars in Chicago there were but 67 in New York, but whereas Chicago holds but 176 displays of accessories, New York contained 329. In Chicago there are but 24 manufacturers of accessories who did not appear in New York and of the number, the best known and most important are four builders of engines—the Continental Motor Co., the Western Motor Co., the Model Gas Engine Works and F. A. Brownell & Co.

The Continental company displays six of its motors, all of the four cylinder type, three of them cast en bloc, the others cast in pairs. The block motors are respectively $3\frac{3}{4} \times 5\frac{1}{4}$ inches, 24 horsepower; $4 \times 4\frac{1}{2}$, 30 horsepower, and $4\frac{1}{8} \times 5\frac{1}{4}$, 32 horsepower. Those cast in pairs are $4\frac{1}{2} \times 5\frac{1}{4}$, 35 horsepower; 5×5 , 40-45 horsepower, and $5\frac{1}{4} \times 5\frac{3}{4}$, 50 horsepower; the latter is made with T head; all others have L heads. All save the 32 horsepower model employ centrifugal water pumps, the "32" is supplied with either the pump or the thermo-siphon system as desired. The 32 and 35 horsepower motors are unit power plants and are demonstrated "long stroke 1912 models." The essential improvements which have been made in the Continental line, as a whole, are as follows: Enclosed valve mechanism; spiral cut steel gear against cast iron gear, instead of both steel gears as formerly, and all gears bathed in oil from plunger pump; design of oil pan and

oil pockets changed, and more pockets added to improve lubrication and to assure oiling on inclined grades; larger oil tank and, on the larger models, double pumps to assure ample lubrication of both front and rear cylinders; cylinder bases made with extended flanges, permitting crank case to be secured more rigidly and avoiding weaknesses at junction of cylinders and crank case; wider flange on crank case to prevent oil leakage and more material in gear case to avoid bounding board effect of gears.

The Western Motor Co. displays its well-known Rutenber engines in these sizes: 4×4 inches, 25 horsepower; $4\frac{1}{8} \times 5\frac{1}{4}$, 30 horsepower; $4\frac{1}{2} \times 5$, 35 horsepower; $4\frac{3}{4} \times 5$, 40 horsepower; all of four cylinders; and $4\frac{1}{8} \times 5\frac{1}{4}$, 45 horsepower, with six cylinders; in all models the cylinders are cast separately. The 30 horsepower "four" and the 45 horsepower "six" are recent additions to the line, the former being built heavier and running at slower speed, being particularly designed for truck service. This model and the 45 horsepower "six" are identical except in respect to proportions. Other features in common and the respects in which they differ from the other Rutenber engines are as follows: Magneto bracket now on side, eliminating the magneto housing and commutator shaft employed when bracket is placed at front of engine; centrifugal instead of gear pumps and both magneto and pump driven by same shaft; water intake pipe on side instead of on top; fan bracket with adjustable spring tension. The older Rutenber motors have been improved to the extent of adding a glass sight feed oil level; eliminating hand holes covers in the crank case and putting on one breather tube instead of several (?) and by the substitution of a pressed steel fan for the

aluminum one previously used. All engines now are being finished in baked enamel.

The Model Gas Engine Works of Peru Ind., which exhibits five types of its motor, plumes itself on the fact that from its beginning it inclined to what now has become known as the long stroke motor. The company's engine had a longer stroke than bore and ever since the construction has been adhered to. Today it is building a 50 horsepower model, $4\frac{1}{2} \times 6$ inches, and a 60 horsepower, 5×7 , which are particularly designed for truck usage. The five models displayed are respectively 35, 40, 55 and 22 horsepower, two of the latter being exhibited. All are of the four cylinder type and are supplied with cylinders cast either separately or in pairs and with valves in head or of the L type with the valves underneath. All Model engines comprise unit power plants and while a four-point suspension is retained, a three-point suspension has been added to the line. Similarly while the Model company retains a three-speed transmission, it also, for the first time, is offering a four-speed as well. The Wells clutch, which has been adopted, is a new feature; substantially it is composite of the multiple disk and cone types, both disks and cone being employed. One small but important improvement that has been effected consists of the use of small 75 pounds compression clutch release springs instead of the 275 pounds compression spring previously employed and which made the release of the clutch a function requiring no little muscular energy. All Model motors now are finished with four coats of enamel and are supplied with or without governors, as desired.

F. A. Brownell & Co. display their unit power plants with both four and six cylinder engines, there being a "big six," 4×5 ,



THE TIMKEN EXHIBIT AND A GLIMPSE OF "ACCESSORY ROW" ON THE COLISEUM GALLERY

of 50 horsepower, and a "little six," of 30 horsepower. The "fours" are shown in 22 and 30 horsepower sizes. All Brownell engines are cast in pairs and are distinguished by valves in head. They are marked only by minor refinements, the newest Brownell product being a truck transmission with differential and double chain, which is designed for two and five ton vehicles.

Of the ignition apparatus missing from the New York shows, probably the most notable were the Pfanstiehl productions which were reserved for display on their native heath. These productions embrace the familiar Pfanstiehl spark coils, with their distinctive "pancake" winding, the same low tension magneto as was shown last year and two new magnetos, which, while retaining many of the features found in the older ones are slightly smaller in size. In the larger of the new magnetos, the high tension wiring, which is of the same "pancake" construction as is employed in the spark coils, is mounted under the arch of the magnets in a waterproof case. In the other new type the same features are embodied, except that the transformer is mounted separately and is supplied either as a non-vibrating dash coil or in a fiber tube which can be mounted under the hood;

but two magnets are used instead of three as in the former. Also new to the Pfanstiehl line, and shown with the other devices, is a "kick" switch, designed to eliminate accidental short circuiting. The withdrawal of the plug, after the lever arm has been moved to the "off" position releases a steel pin which slips into an opening in the lever arm positively locking it in this position and effectually preventing the current from being turned on again accidentally or intentionally until the plug has been replaced.

In addition to the Motsinger magneto, designed chiefly for marine use, the Motsinger Auto-Sparker is shown by the Motsinger Device Mfg. Co., of Lafayette, Ind. The device is compact and of the low tension type and is intended for use in automobile lighting systems as well as for ignition. The speed of the armature is regulated by a centrifugal governor, the igniter being driven by friction off the flywheel of the engine.

The exhibit of the Never-Miss Spark Plug Co., of Lansing, Mich., consists chiefly of spark plugs, which are shown in a number of styles and sizes. Never-Miss corrugated battery connectors, Never-Miss ammeters and a handy chain repair device also are included in the exhibit at this stand.

Oil lamps and combination oil and electric side and tail lamp constitute the bulk of the exhibit of the Adams & Westlake Co., of Chicago, which for years has been producing railway lamps and other railway supplies, but the chief feature of the display is the Adlake-Newbold ignition-lighting system which is shown for the first time, which embraces a number of features, which while heretofore foreign to automobile lighting practice have been used for some time in the railroad axle car lighting systems, marketed by the same company. The current is generated by a shunt wound dynamo and is regulated automatically by a controller actuated by a solenoid. The controller maintains a constant voltage on the lighting circuit regardless of the speed of the engine and automatically cuts out the dynamo when the engine stops, current for the lights then being drawn from a storage battery.

The S. T. Ham Co., Rochester, N. Y., also has a comprehensive exhibit of oil, electric and combination lamps, but a new rear signal system is the "big thing." The device, which is electrically lighted, consists of four small bullseyes, a red light serving the purpose for a tail lamp, the electric bulb also throwing a white light downward onto the license plate. The other three

lenses of different colors, i. e., red, white and green, are operable by a button within reach of the driver and are for his use in signalling his intention of stopping or turning. Solidly constructed of steel and finished in black, a new oil burning side lamp designed for use on commercial vehicles, also is shown at this booth.

A multiplicity of possible positions is a feature of the windshields displayed by the Union Auto Specialties Co., of Pittsburg, Pa. The frame and bracket permit the upper half of the shield to be folded or projected backward or forward and to be tilted at several angles, no less than nine different positions and adjustments being possible. The Fellwock Auto & Mfg. Co., of Evansville, Ind., also displays several styles of windshields, which it is closing out to make way for another line of manufacture.

A novel exhaust horn valve forms part of the Barco Brass & Joint Co., of Chicago, Ill. The valve, which is new in principle, consists of but three parts, which are so arranged as to permit of an unobstructed passage for the gases when the valve is open. It is claimed that it is soot-proof

and that it may readily be taken apart without removing it from the exhaust pipe. The Barco thief-proof gas tank carrier also is shown as a new battery box in which wires are unnecessary, the action of placing the cells in the box making the required contacts.

The Gray-Hawley Mfg. Co., of Detroit, Mich., has on exhibit an extensive line of mufflers, cut-out valves and foot pedals. The familiar Autochime horn is accompanied this year by a new device for the same purpose called the Autolarm. The new horn is smaller than the older one and is slightly cheaper. A circular pressed steel combined tire and tool case is shown by F. E. Sparks, of Chicago. In the case the space not taken up by the tire is utilized for a square tool box.

The Skinner & Skinner Co., of Chicago, Ill., exhibits several styles of hand operated tire pumps and a power operated tire pump which attaches to the engine. A new type of recoil check spring which clamps to the frame, requiring no bolts, a tire pressure tester and the Skinner automobile "truck"—one of the castor family—also are shown.

Transmissions, side levers, cone clutches, steering gears, universal joints and numerous other finished parts which go to make up automobiles are exhibited by the Auto Parts Mfg. Co., of Muncie, Ind. "Velvet" auxiliary springs, shown by the John W. Blackledge Mfg. Co., of Chicago, Ill., differ from the general supplementary springs in that four coil springs are used in each unit. Whiteley's steel castings in a variety of forms used in the manufacture of automobiles and engines constitute the exhibit of the Whiteley Steel Co., of Muncie, Ind.

Three types of radiators, styled "long distance coolers," are shown by the Long Mfg. Co., of Chicago, Ill.; they comprise the familiar square tube cellular, flat tube honeycomb and spiral tube styles.

Automobile tops are shown by the Marshalltown Buggy Co., of Marshalltown, Ia., and by the Gates-Osborne Mfg. Co., of the same city.

Carborundum and carborundum grinding wheels and grinding devices comprise the exhibit of the Norton Co., of Worcester, Mass.

Summary of the Exhibits of Parts and Accessories at the Chicago Show

(Space numbers Denoted "A" are located in the First Regiment Armory; all others are in the Coliseum. Exhibits indicated by an asterisk (*) were not displayed in New York. Exhibits marked by a dagger (†) will remain for the second week.

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|---|---|--|
| <p>Adams & Westlake Co., Chicago, Ill. (8A)
—Side lamps, tail lights and electric lighting system.*†</p> <p>Atlantic Refining Co., Cleveland, Ohio (17A)—Arco Spitzoff metal polish.</p> <p>Ajax-Grieb Rubber Co., New York City (125)—Ajax tires.</p> <p>Ajax Trunk & Sample Case Co. New York City (3A)—Tire trunks.</p> <p>Auto Parts Mfg. Co., Muncie, Ind. (81)—Transmissions and clutches.*</p> <p>American Ball Bearing Co., Cleveland, Ohio (29)—Ball bearings and axles.†</p> <p>American Ever Ready Co., New York City (96)—Ever Ready batteries, lamps, etc.†</p> <p>Apple Electric Co., Dayton, Ohio (142)—Dynamos, storage batteries and lighting accessories.</p> <p>Armiger Chemical Co., Chicago, Ill. (22A)—Rex metal polish.*</p> <p>Atlas Chain Co., Brooklyn, N. Y. (7A)—Atlas tire chains.†</p> <p>Auburn Auto Pump Co., Auburn, N. Y. (145)—Tire pumps.</p> <p>Auto Improvement Co., New York City (95)—Self-starting devices and accessories.†</p> <p>Badger Brass Mfg. Co., Kenosha, Wis. (41)—Solar lamps and generators.†</p> <p>Baldwin Chain & Mfg. Co., Worcester, Mass. (61)—Baldwin chains and recoil checks and Brown steering gears.†</p> <p>Barco Brass & Joint Co., Chicago, Ill. (14A)—Exhaust horns and muffler cut-out valves.*</p> <p>Batavia Rubber Co., Batavia, N. Y., (137)—Batavia tires.</p> | <p>Blackledge Mfg. Co., John W., Chicago, Ill. (31A)—Auxiliary springs.*</p> <p>Booth Demountable Rim Co. (95)—Demountable rims.</p> <p>Bosch Magneto Co., New York City (118)—Ignition systems.†</p> <p>Bowser & Co., S. F., Fort Wayne, Ind. (72)—Bowser gasoline and oil storage apparatus.†</p> <p>Briggs Mfg. Co., Elkhart, Ind. (116)—Briggs magneto.†</p> <p>Briggs & Stratton Co., Milwaukee, Wis. (133)—B & S igniter.†</p> <p>Briscoe Mfg. Co., Detroit, Mich. (24)—Radiators and fittings.†</p> <p>Brown Lipe Gear Co., Syracuse, N. Y. (63)—Transmissions, differentials and steering gears.</p> <p>Brownell Motor Co., F. A., Rochester, N. Y. (18A)—Motors.*</p> <p>Byrne-Kingston & Co., Kokomo, Ind. (75)—Kingston carburetters.†</p> <p>Chilton Co., Philadelphia, Pa. (34A)—Publications.†</p> <p>Class Journal Co., New York City (40A)—Publications.</p> <p>Cleveland Speed Indicator Co., Cleveland, Ohio (106)—Cleveland speed and time indicators.†</p> <p>Connecticut Telephone and Electric Co., Meridian, Conn. (13)—Shock absorbers, spark coils, magnetos and ignition specialties.†</p> <p>Consolidated Rubber Tire Co., New York City (16)—Tires.†</p> <p>Continental Caoutchouc Co., New York City (10)—Continental tires and rims.†</p> | <p>Continental Motor Mfg. Co., Muskegon, Mich. (65)—Motors.†</p> <p>Continental Rubber Works Co., Erie, Pa. (115)—Tires.†</p> <p>Cook's Sons, Adam, New York City (130)—Lubricants.</p> <p>Cook's Standard Tool Co., Kalamazoo, Mich. (93)—Tools.†</p> <p>Cramp & Sons Ship and E. B. Co., Wm., Philadelphia, Pa. (37)—Bronze and bearing metals.†</p> <p>Diamond Chain & Mfg. Co., Indianapolis, Ind. (35)—Chains and sprockets.†</p> <p>Diamond Rubber Co., Akron, O. (55)—Diamond tires.</p> <p>Dietz Co., New York City (34)—Lamps.†</p> <p>Dixon Crucible Co., Jos., Jersey City, N. J. (25)—Lubricants.†</p> <p>Dorian Remountable Rim Co., New York (135)—Dorian remountable rim.</p> <p>Dover Stamping and Mfg. Co., Cambridge, Mass. (139)—Drip pans and funnels.</p> <p>Driggs-Seabury Ordnance Corp., Sharon, Pa. (102)—Crank shafts and frames.†</p> <p>Edmunds & Jones Mfg. Co., Detroit, Mich. (73)—Lamps.†</p> <p>Edison Storage Battery Co., Orange, N. J. (101)—Storage batteries.†</p> <p>Eisemann Magneto Co., New York City (110)—Magnetos.†</p> <p>Electric Storage Battery Co., Philadelphia, Pa. (69)—Accumulators.†</p> <p>Elite Mfg. Co., Ashland, Ohio (2A)—Jacks.</p> <p>Empire Tire Co., Trenton, N. J. (107)—Empire tires.†</p> <p>Ernst's Sons, C. F., Buffalo, N. Y. (76)—Turntables.</p> |
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- Excelsior Motor & Mfg. Co., Chicago Ill. (86)—Motors.†
- Findeisen & Krypt Mfg. Co., Chicago, Ill. (16A)—Carburetters and specialties.†
- Fellwock Auto & Mfg. Co., Evansville, Ind. (10A)—Special seats and windshields.*
- Firestone Tire & Rubber Co., Akron, Ohio (67)—Firestone pneumatic and solid tires.†
- Fisk Rubber Co., Chicopee Falls, Mass. (38)—Fisk tires.†
- G & J Tire Co., Indianapolis, Ind. (44)—G & J tires.†
- Gabriel Horn Mfg. Co., Cleveland, Ohio (50)—Gabriel exhaust horns and Foster shock absorbers.†
- Garage Equipment Mfg. Co., Milwaukee, Wis. (23A)—Gem spark plug wrench and supplies.†
- Gates-Osborne Mfg. Co., Marshalltown, Ia. (26A)—Tops.*
- Gemmer Mfg. Co., Detroit, Mich. (85)—Steering gears and parts.†
- Gibney & Bro., Jas. L., Philadelphia, Pa. (27A)—Electric tire vulcanizer.
- Gilbert Mfg. Co., New Haven, Conn. (127)—Bowers carburetter, tire jacks, lamps covers, etc.
- Globe Machine & Stamping Co., Cleveland, Ohio (129)—Steel boxes for tools.
- Goodrich Co., B. F., Akron, Ohio (47)—Goodrich tires.†
- Goodyear Tire and Rubber Co., Akron, Ohio (51)—Goodyear tires and air bottles.†
- Gray & Davis, Amesbury, Mass. (43)—Lamps.†
- Gray-Hawley Mfg. Co., Detroit, Mich. (36)—Exhaust horns and mufflers.*†
- Hagstrom Bros. Mfg. Co., Lindsborg, Kan. (24A)—Tire sleeves.
- Ham Mfg. Co., Rochester, N. Y. (6)—Lamps and rear signal system.*†
- Hardy Co., R. E., Chicago, Ill. (122)—Sta-rite spark plugs.
- Harris Oil Co., A. W., Providence, R. I. (58)—Lubricants.†
- Hartford Rubber Works Co., Hartford, Conn. (30)—Hartford tires.†
- Hartford Suspension Co., Jersey City, N. J. (59)—Truffault-Hartford shock absorbers.†
- Havoline Oil Co., New York City (89)—Lubricants.†
- Haws, Geo. A., New York City (138)—Lubricants.
- Hayes Mfg. Co., Detroit, Mich. (5A)—Metal bodies, hoods and fenders.†
- Heinze Electric Co., Lowell, Mass. (17)—Magnetos, coils and ignition devices.†
- Herz & Co., New York City (5)—Power driven garage air pump and ignition devices.†
- Homo Co. of America, Jersey City, N. J. (97)—Homo mixer.†
- Horseless Age, New York City (1A)—Publications.†
- Imperial Brass Mfg. Co., Chicago, Ill. (5B)—Tire pumps.*†
- Jones Speedometer Co., New York City (7)—Speedometers, odometers, annunciators and specialties.†
- K-W Ignition Co., Cleveland, Ohio (25A)—Ignition devices.
- K & W Mfg. Co., Ashland, Ohio (22A)—K & W reliners for tires.
- Kent Mfg. Works, Atwater, Philadelphia, Pa. (134)—Igniters and timers.
- Keystone Lubricating Co., Philadelphia, Pa. (30A)—Keystone oils and grease.
- Kokomo Electric Co., Kokomo, Ind. (74)—Kingston coils and timers.†
- Leather Tire Goods Co., Niagara Falls, N. Y. (132)—Adjustable tire treads and non-skid bands.
- Link Belt Co., Philadelphia, Pa. (104)—Chains.†
- Long Mfg. Co., Chicago, Ill. (53)—Radiators.*†
- Longdin-Brugger Co., Fond du Lac, Wis. (39A)—Automatic tops.*
- Lovell-McConnell Mfg. Co., Newark, N. J. (2)—Klaxon horns.†
- Lutz-Lockwood Mfg. Co., Roselle, N. J. (11A)—S-X ignition devices.†
- McCord Mfg. Co., Detroit, Mich. (22)—Radiators, lubricators, fans and gaskets.†
- McCue Co., Hartford, Conn. (140)—Axles.
- Manufacturers Foundry Co., Waterbury, Conn. (279)—Castings.
- Marshalltown Buggy Co., Marshalltown, Ia. (20 A)—Tops.
- Motor Parts Co., Plainfield, N. J. (12A)—Stanwood steps.
- Motor Vehicle Publishing Co., New York City (15A)—Publications.†
- Mezger, C. A., Inc., New York City (—)—Windshields and "Soot-proof" plugs.†
- Michelin Tire Co., Milltown, N. J. (1)—Michelin tires.†
- Model Gas Engine Works, Peru, Ind. (38A)—Motors, clutches and transmissions.*†
- Morgan & Wright, Detroit, Mich. (26)—Morgan & Wright tires.†
- Morrison-Ricker Mfg. Co., Grinnell, Ia. (36A)—Grinnell gloves.†
- Motz Clincher Tire & Rubber Co., Akron, Ohio (77)—Tires.†
- Motor Age, Chicago, Ill. (5A)—Publications.
- Motor Parts Co., Plainfield, N. J. (12)—Tools.
- Motsinger Device Mfg. Co., Lafayette, Ind. (121)—Ignition devices.*
- Muncie Gear Works, Muncie, Ind. (84)—Parts.†
- National Carbon Co., Cleveland, Ohio (46)—Dry cells.†
- National Coil Co., Lansing, Mich. (103)—Spark coils.†
- National Tube Co., Pittsburg, Pa. (40)—Shelby seamless steel tubing.†
- Never-Miss Mfg. Co., Lansing, Mich. (131)—Spark plugs.*
- New York & New Jersey Lub. Co., New York City (8)—Lubricants.†
- Norton Co., Worcester, Mass. (5A)—Grinding wheels.*
- Oliver Mfg. Co., Chicago, Ill. (70)—Peerless jacks.†
- Pantasote Co., New York City (124)—Top and upholstering materials.
- Pennsylvania Rubber Co., Jeannette, Pa. (18)—Pennsylvania tires.†
- Perfection Spring Co., Cleveland, O. (6A)—Automobile springs.†
- Pfanstiehl Electrical Laboratory, North Chicago, Ill. (114)—Ignition devices.*
- Pittsfield Spark Coil Co., Dalton, Mass. (64)—Magnetos, coils, plugs and ignition devices.†
- Polson Mfg. Co., Buffalo, N. Y. (32A)—Windshields.
- Pratt Mfg. Co., Wm. E., Chicago, Ill. (4A)—Jacks.
- Randall-Faichney Co., Boston, Mass. (114)—Jericho exhaust horns. B-line grease guns and Bing spark plugs.†
- Remy Electric Co., Anderson, Ind. (66)—Magnetos.†
- Republic Rubber Co., Youngstown, Ohio (20)—Republic tires.†
- Reichenbach Laboratories Co., Chicago, Ill. (143)—Vortex vaporizer.
- Ross Gear & Tool Co., Lafayette, Ind. (98)—Steering gears.†
- Royal Equipment Co., Bridgeport, Conn. (82)—Band brakes and brake lining material.†
- Russell Motor Axle Co., North Detroit, Mich. (147)—Axles.
- Sager Co., J. H., Rochester, N. Y. (128)—Supplementary springs.
- Shaler Co., C. A., Waupun, Wis. (136)—Electric vulcanizers.
- Shawmut Tire Co., Boston, Mass. (29A)—Shawmut tires.
- Sherwin-Williams Co., New York City (90)—Paints and varnishes.
- Simms Magneto Co., New York City (21A)—Simms magneto.
- Skinner & Skinner Co., Chicago, Ill. (19A)—Turntables, hand tire pumps and shock absorbers.*
- Smith Co., A. O., Milwaukee, Wis. (15)—Gears and parts.†
- Sparks, Frank E., Chicago, Ill. (27A)—Combined tire and tool case.*†
- Sparks-Withington Co., Jackson, Mich. (112)—Fans, stampings and screw machine products.
- Spicer Mfg. Co., Plainfield, N. J. (62)—Spicer universal joints.†
- Splitdorf, Inc., C. F., New York City (49)—Splitdorf magnetos, plugs and ignition devices.†
- Sprague Umbrella Co., Norwalk, Ohio (79)—Tops and windshields.
- Standard Roller Bearing Co., Philadelphia, Pa. (4)—Roller bearings.†
- Standard Welding Co., Cleveland, Ohio (28)—Electrically welded tubing and parts.†
- Standard Varnish Works, Chicago, Ill. (28A)—Varnishes.*
- Standard Thermometer Co., Boston, Mass. (146)—Standard speedometer.
- Star Rubber Co., Akron, Ohio (117)—Star tires.



AMONG THE ACCESSORIES ON THE SECOND FLOOR OF THE COLISEUM ANNEX

Stein Double Cushion Tire Co., Akron, Ohio (113)—Tires.†
 Stewart & Clark Mfg. Co., Chicago, Ill. (105)—Speedometers.†
 Stromberg Motor Devices Co., Chicago, Ill. (87)—Carburettors.†
 Swinehart Tire & Rubber Co., Akron, Ohio (14)—Swinehart tires.†
 Thermoid Rubber Co., Trenton, N. J. (91)—Tires, tubes and brake linings.†
 Timken Roller Bearing Co., Canton, Ohio (33)—Roller bearings.†
 Timken-Detroit Axle Co., Detroit, Mich. (32)—Axles.†
 Tingley & Co., Chas. O., Rahway, N. J. (13A)—C. O. T. electrical horn.
 Troy Carriage Sunshade Co., Troy, Ohio (37A)—Windshields and tops.
 Turner Brass Works, Sycamore, Ill. (100)—Brass parts and fittings.†
 U. S. Light & Heating Co., New York City (76A)—Storage batteries.†
 Universal Tire Protector Co., Angola, Ind. (9A)—Universal tire protector.†
 Union Auto Repair Co., Pittsburg, Pa. (33A)—Windshields.*
 Valentine & Co., New York City (11)—Varnishes.†
 Van Wagner Co., E. B., Syracuse, N. Y. (120)—Dies and finished metal castings.†

Veeder Mfg. Co., Hartford, Conn. (42)—Tachometers and odometers.†
 Vesta Accumulator Co., Chicago, Ill. (3)—Accumulators.†
 Warner Gear Co., Muncie, Ind. (57)—Gears and parts.†
 Warner Instrument Co., Beloit, Wis. (19)—Warner autometers and clocks.†
 Warner Mfg. Co., Toledo, Ohio (78)—Transmissions and steering gears.
 Weed Chain Tire Grip Co., New York City (9)—Weed tire chains.†
 Western Motor Co., Logansport, Ind. (109)—Motors.*
 Whiteley Steel Co., Muncie, Ind. (99)—Steel castings.*†
 Wheeler & Shebler Indianapolis, Ind. (12)—Carburettors and magnetos.†
 Whitney Mfg. Co., Hartford, Conn. (23)—Whitney chains.†
 Williams Co., J. H., New York City (54)—Forgings.†
 Willard Storage Battery Co., Cleveland, Ohio (144)—Elba lighting outfits.†

How Discounts Affect "Owners' Leagues."

The manner in which the so-called and privately owned automobile owners' organizations, which masquerade as leagues and associations, are conducted, and how

they advance the interests of their members is well illustrated by a circular letter which one of the kind, the American Automobile League, of New York, has been sending to the manufacturing trade.

"As our subscribers send the money in advance for the purchase of their requirements," says this circular, "we are able to pay spot cash for anything we buy for them. Naturally we influence their purchases toward the brands on which we secure the best discounts with a proper consideration of merit in quality. We trust your terms will be sufficiently liberal to justify us in trying to influence our trade in your direction."

Boston to Have an "Overflow" Show.

All available space at the Mechanics' building, where Boston's automobile show will be in full sway during the week of March 4, having been allotted and applications still coming in, the Automobile Dealers' Association, which has the exhibition in hand, has decided to hold an "overflow" exhibit in Horticultural hall, which once before was used for the purpose. One ticket will admit to both shows, and a sight-seeing automobile will be provided to carry visitors from one building to the other.

Maryland Tilts at the Nation's Heads.

It would be a somewhat difficult undertaking for President Taft to take a ride—even an official ride—of any length in one of the several automobiles placed at his disposal by the Federal Government, without crossing either the border of Virginia or that of Maryland. Despite the fact, the secretary of the State of Maryland has declined to furnish the president with Maryland license tags unless the fee is forthcoming, and intimates that without such tags the head of the Nation will be subjected to arrest. But in his desire to enrich the treasury of the state, the Maryland official has come into contact with the Controller of the Treasury and the Quartermaster General of the army, both of whom emphatically declare that the property of the United States and the instrumentalities whereby it performs its proper governmental functions cannot be taxed by the individual states nor by the District of Columbia, and they even cite United States Supreme Court decisions to prove their point. In the meantime John E. George, the state motor vehicle commissioner of Maryland, waxes grandiloquent in his threats of the dire things he is going to do to the man who does not pay the regular license fees, specifically and particularly including in his threats all the "Princes, potentates, presidents and vice-presidents"—who, he says, look alike to him, anyway.

Michigan, Too, Wants All Vehicles Lighted.

More and more the common-sense view of "Lights for All Vehicles" is gaining ground in the Central and Western states, even such conservative governments as that of the city of Washington, D. C., passing laws compelling the putting of lights on all kinds of vehicles. The latest state to deal with the question is Michigan, where an ordinance to this effect just has been introduced by Assemblyman A. W. Copley, of Detroit. The provision has been in effect since several weeks in the city of Detroit itself, where it has proven of considerable assistance to automobile drivers and to the general traffic, and there seems little doubt in the minds of a majority of Michigan legislators that a like law for the whole state would be of benefit to all.

Almanac Brings About An Acquittal.

Jerome Kennedy, a New York stock broker, who had been arrested for driving an unlighted car, taught the police and public a thing or two when his case was called in the Yonkers court. He brought an almanac as his chief witness. The police station blotter showed that he was arrested at 5:07 p. m. The law states that the operator of an automobile or any other vehicle is permitted a half hour's grace after sunset within which to light his lamps. The almanac showed that the sun did not set on this particular day until after 4:45 p. m. As the arrest was made when only 22

minutes of the half-hour's grace had elapsed, the judge discharged Kennedy and congratulated him on the way he had safeguarded his rights.

Camden's Queer Club Opposes Reciprocity.

"Biting off their noses to spite their faces," the Camden Motor Club—which is located across the river from Philadelphia—has filed petitions with the legislature of the Mosquito State protesting against any and all reciprocity arrangements, and more particularly with the "hostile" State of Pennsylvania. When last year New Jersey refused to extend reciprocity to its neighbors, and Pennsylvania gave the Jerseyites some of their own medicine, motorists hailing from the state of Senator Joe Frelinghuysen found themselves harassed by red tape, arrests and fines, until their very souls rebelled against the treatment. But instead of treating their neighbors as friends and countrymen, in which case these annoying arrangements probably would vanish of themselves, the Camden motorists are yelling for further extension of the "no reciprocity" policy, which has become a veritable escutcheon of New Jersey.

Wrong Color Delays State's License Tags.

There are about 63,000 motorists in New York State who are waiting for their new license plates as a result of a mistake made in the color of the numerals. The 1911 number plates were ordered to be made with white figures to stand out on a maroon background, but when the plates arrived, Edward Lazansky, the new secretary of state, found that the numbers were pink, so he had to send them back to the makers. New ones have been made and are coming through so slowly that it will be several weeks before all are delivered, despite the fact that the law requires that they be displayed by owners by February 1. As a result of the delay, the secretary of state has requested the police to "go easy" in making arrests until all the license plates are in hand.

Mexico Interferes With Oldfield's Plans.

Barney Oldfield is in position to rail at the ingratitude of republics. After having been given a mighty swat by the American Automobile Association he teamed up with Jim Jeffries, the white pugilist who did not defeat Jack Johnson, the black scrapper and Oldfield's erstwhile rival, and they proposed to go barnstorming in Mexico, Jeffries's share of the program to consist of a boxing exhibition. The Mexican authorities, however, promptly made known that such exhibitions would not be permitted, and that if persisted in Jeffries would go to jail. The announcement has put quite a crimp in Oldfield's plans for corraling the Mexicans' coin, and he will have to be satisfied to give an exhibition on February 18-19 with the Benz, while Jeffries acts as his mechanic.

Aeroplanes Are Motor Vehicles on Coast.

When applied to aeroplanes, the term "vehicle," though perfectly correct, scarcely seems to fit the case, but out in California, where Glenn H. Curtiss is training army and navy officers, and Eugene Ely is flying to and from battleships as a diversion, a bill recently was introduced in the legislature providing for the designation of aeroplanes as "motor vehicles," the registration of such vehicles with the secretary of state and the taking out of a license number to be displayed on the machine. The bills governing aerial highways were introduced in the California Legislature in Sacramento by Messrs. Fitzgerald and Wolfe, and were prepared under the guidance of the Pacific Aero Club of San Francisco. The measure further provides that all aeroplanes "shall carry at least four lights, one in the center of the vehicle in front of the driver, one at the extreme rear and one at each end of the lifting planes, these last two to be one red and one green, the red light to be placed at the end of the right plane and the green at the end of the left plane."

Oakland Motordrome Races Postponed.

The two days' racemeet which was to have taken place on the new Oakland motordrome, which is nearing completion, has been postponed and will be held on Saturday and Sunday, February 11 and 12, instead of on January 28 and 29, as previously announced by the promoters. The meet has been sanctioned by the American Automobile Association, and seven races will be decided on each of the days, the longest race being a free-for-all 10 miles event open to cars in class D. The new track is a wooden "saucer" one-half mile in circumference, and is banked at an angle of 38 degrees.

New Jersey Law Wins Opening Round.

Although meeting with considerable opposition from horse owners who were unable to see the advantages to themselves contained in the "lights for all vehicles" bill, this common sense but oft-rejected measure, introduced and championed by Senator Edge in the New Jersey Senate, was passed by a big majority on January 31. The bill requires all horse-drawn vehicles to carry lights from 30 minutes after sunset to 30 minutes before sunrise, and fixed a penalty of from \$1 to \$10 for violations of the ordinance.

Where Club Membership Saves Bail Bonds.

The identification card idea is spreading all over the country, the latest convert to the new scheme being the staid city on the shores of the Salt Lake, in the Mormon State. By arrangement with the police department, members of the Automobile Club of Utah, who are in possession of their regular club cards, will not be required to furnish bail when arrested for violation of the traffic ordinances.

57 VARIETIES OF TRUCKS FOR CHICAGO SHOW

**They Will Include Most of Those Exhibited in New York and 29 that Were Not Seen in the East—
Will Replace the Pleasure Cars in the Coliseum, the Armory Being Abandoned and All
Exhibits Concentrated in One Building—Sunday to be the Moving Day.**

When the doors of the Coliseum close next Saturday night it will not be the finale of the Windy City's big exposition, but only the "curtain" of the first act. For as everyone knows, the Chicago show, like the recent Madison Square Garden show in New York, is a spectacle in two acts with a 36-hour intermission.

Nor let those who are disposed to consider the entr'acte rather a long one fail to note that the scene-shifting by no means is a simple matter, despite the fact that the setting is to remain practically unchanged. The "properties," which is to say the exhibits of the products of no less than 98 automobile manufacturers, will have to be removed and the stands cleared and slightly rearranged. A relatively small number of the vast array of parts and accessory exhibits also will be removed. Then the stage will be cleared for the second act. People who are familiar with the mechanism of automobile show machinery are able to understand that it is no mean task to remove 317 different cars and a train-load of cases of parts, sundries and special displays through four narrow doorways inside of 24 hours.

Putting on the second act would be a less serious undertaking, inasmuch as there will be fewer exhibitors and a smaller "stage"—the Armory being closed—were it not for the fact that the time allotted is very limited. Act two, Part II, as the management which represents the National Association of Automobile Manufacturers in this its only national show of 1911 prefers to designate it, is scheduled to open on Monday forenoon. Like Part II of the New York show, it will be a display of commercial vehicles. Unlike the New York commercial vehicle show, however, it will not be the first exhibition of the same character to be held locally.

The Chicago show of three years ago and a trifle over—December, 1907, to be exact—boasted a forerunner of the present exhibition in the shape of a limited display of trucks, which was staged in a dismal armory building several dirty blocks distant from the Coliseum. While fully up to its time, that show failed to net the exhibitors all the encouragement and direct profit which their fond hopes had led them to anticipate.

There were no less than 48 vehicles on view, nevertheless, 33 of which were gasoline and 15 electrically propelled. A majority of the types were really practical in

form, though less refined in detail than the commercial cars of the present day and certainly less substantial. The show, as a pioneer exhibition of automobiles of a particular class, therefore, was distinctly notable and it is unquestionable that it served a helpful purpose in fostering the youthful freight-car industry. Furthermore it is proper to consider the outlay involved in that display as a legitimate investment upon which ample returns have been received already and still are being received. Comparisons are not necessarily invidious, and many of the show visitors of next week will view the array of business vehicles before a mental background, a background in which are former models of some of the same cars arrayed in the Seventh Regiment Armory that was, with its decorations charred and roof singed by the fire that threatened to wipe the first show out of existence before the end of its second day.

For the show of next week there will be more exhibitors of trucks than there were of complete vehicles in the first commercial vehicle exposition this country ever has seen. There will be 57 exhibitors, judging by the official list, possibly one or two more late entries. To round out the show 137 displays of parts and accessories will be on view, while in the section devoted to motorcycles no less than 24 exhibitors will array their products.

As is the case with Part I, the real glamor of novelty has been usurped by the earlier display of a majority of the same products in New York. To western visitors, however, and to the immense number of middle western business men whose interest in commercial vehicle matters has led them to signify their intention of attending the show, this is of no particular significance. As far as the industry itself is concerned the Chicago show will be even more comprehensive than its predecessor. It will reveal more than a score more of vehicle exhibits than were to be seen at New York, while there will actually be a considerably greater number of business wagons on the floor of the Coliseum than there were shown in Madison Square Garden, for the reason that the latter show included electric pleasure vehicles, as well as trucks, which will not be the case in Chicago.

Twenty-nine of the manufacturers on the list were not in New York, and therefore their exhibits will have the genuine flavor of novelty that adds the particular attrac-

tion to original displays. All but five of the group that will be disclosed as new when the curtain rises next Monday night—to return to theatrical parlance—will be making their maiden bow to the show-goer of one of the big productions; less than a dozen of them having been before the footlights of the local circuits in former seasons.

The newcomers will include the Adams Bros. Co., Abresch-Cramer Auto Truck Co., Automobile Maintenance & Manufacturing Co., Avery Co., Baker Motor Vehicle Co., Brodesser Motor Truck Co., Cartecar Co., Chicago Commercial Car Co., Clark Delivery Car Co., Clark Power Wagon Co., Couple-Gear Freight Wheel Co., Courier Car Co., Dayton Auto Truck Co., Economy Motor Car Co., Federal Motor Truck Co., Harder's Fire Proof Storage & Van Co., Independent Harvester Co., Thomas B. Jeffery Co., Kinnear Manufacturing Co., Kelly Motor Truck Co., Mais Motor Truck Co., W. H. McIntyre Co., Marquette Motor Vehicle Co., Mercury Manufacturing Co., Schacht Motor Car Co., Schmidt Bros. Co., Sternberg Manufacturing Co., United States Motor Truck Co., and the Waterville Tractor Co.

Among the exhibitors who will repeat their displays "direct from New York" will be the makers of such sterling products as the Hewitt, Sampson, Knox, Pierce-Arrow, White, Morgan, Alco and Kissel trucks, in the heavier class; the Franklin, Atlas, Grabowsky, Reo and Overland, in the medium and light class; and the General Vehicle, Studebaker, Anderson and Lansden in the smaller but no less important group of electric commercials.

The complete "cast" for Act II of the show, in other words, the exhibitors, their locations and the products that they will display, follows:

Commercial Vehicles Coliseum. (Main Floor).

- Abresch-Cramer Co., Milwaukee, Wis. (H1)
—Abresch.
- Adams Bros., Findlay, Ohio (E4)—Adams.*
- Alden-Sampson Mfg. Co., Detroit, Mich.
(B1)—Sampson trucks.
- American Locomotive Co., New York City
(D2)—Alco trucks.
- Anderson Electric Car Co., Detroit, Mich.
(M4)—Detroit.
- Atlas Motor Car Co., Springfield, Mass.
(G1)—Atlas delivery wagons.

Automobile Maintenance & Mfg. Co., Chicago, Ill. (M1)—Walker.*
 Avery Co., Peoria, Ill. (C3)—Avery.*
 Baker Motor Vehicle Co., Cleveland, O. (F2)—Baker.
 Brodesser Motor Truck Co., Milwaukee, Wis. (R1)—Brodesser.*
 Buick Motor Co., Flint, Mich. (H3)—Buick delivery wagons.
 Cartercar Co., Pontiac, Mich. (B7)—Cartercar delivery wagons.
 Chicago Commercial Car Co., Chicago, Ill. (J1)—
 Clark Delivery Car Co., Grand Crossing, Chicago, Ill. (B2)—Clark.*
 Clark Power Wagon Co., Lansing, Mich. (H4)—Clark.
 Couple-Gear Freight Wheel Co., Grand Rapids, Mich. (F3)—Couple-Gear.
 Courier Car Co., Dayton, Ohio (B2)—Courier.
 Dayton Auto Truck Co., Dayton, Ohio (G3)—Dayton.*
 Economy Motor Car Co., Joliet, Ill. (M3)—Economy.*
 Federal Motor Truck Co., Detroit, Mich. (L1)—Federal.*
 Franklin Mfg. Co., H. H., Syracuse, N. Y. (D5)—Franklin trucks and delivery wagons.
 Garford Co., Elyria, Ohio (B9)—Garford trucks.
 General Vehicle Co., New York City (F3)—General.
 Grabowsky Power Wagon Co., Detroit, Mich. (B8)—Grabowsky trucks.
 Harder's Fire Proof Storage & Van Co., Chicago, Ill. (S1)—
 Independent Harvester Co., Plano, Ill. (E3)
 Jeffery Co., Thos. B., Kenosha, Wis. (C2)—Rambler.*
 Kelly Motor Truck Co., Springfield, O. (E2)—Kelly.
 Kissel Motor Car Co., Hartford, Conn. (D7)—Kissel trucks.
 Kinnear Mfg. Co., Columbus, Ohio (F2)—
 Knox Automobile Co., Springfield, Mass. (D6)—Knox public-service vehicles.
 Lansden Co., Newark, N. Y. (K1)—Lansden.
 McIntyre Co., W. H., Auburn, Ind. (B3)—McIntyre delivery wagons.
 Mack Brothers Motor Car Co., Allentown, Pa. (A1)—Mack trucks and buses.
 Mais Motor Truck Co., Indianapolis, Ind. (A2)—Mais.*
 Marquette Motor Vehicle Co., Chicago, Ill. (N1)—Marquette.*
 Mercury Mfg. Co., Chicago, Ill. (G2)—Mercury.*
 Metzger Motor Car Co., New York City (D4)—Hewitt trucks.
 Monitor Automobile Works, Janesville, Wis. (N2)—Monitor.
 Morgan Co., R. L., Worcester, Mass. (E1)—Morgan trucks.
 Packard Motor Car Co., Detroit, Mich. (C1)—Packard trucks.
 Peerless Motor Car Co., Cleveland, Ohio (D1)—Peerless trucks.

Pierce-Arrow Motor Car Co., Buffalo, N. Y. (D3)—Pierce-Arrow trucks.
 Rapid Motor Vehicle Co., Pontiac, Mich. (C5)—Rapid trucks.
 Reliance Motor Truck Co., Owosso, Mich. (C4)—Reliance trucks.
 Reo Motor Truck Co., Lansing, Mich. (B5)—Reo trucks.
 Saurer Motor Trucks, Chicago, Ill. (F5)—Saurer.
 Schmidt Bros. Co., Chicago, Ill. (N4)—Schmidt F. C. S.*
 Stearns Co., F. B., Cleveland, Ohio (M2)—Stearns trucks.
 Sternberg Mfg. Co., Milwaukee, Wis. (R2)—Sternberg.*
 Studebaker Automobile Co., South Bend, Ind. (A6)—Studebaker.
 U. S. Motor Truck Co., Cincinnati, Ohio (A3)—U. S.*
 Van Dyke Motor Car Co., Detroit, Mich. (G4)—Van Dyke.*
 Waterville Tractor Co., Waterville, O. (H2)—Tractor.
 Waverley Co., Indianapolis, Ind. (B4)—Waverley.
 White Co., Cleveland, Ohio (A5)—White gasoline trucks.
 Willys-Overland Co., Toledo, Ohio (B6)—Overland trucks and delivery wagons.

Motorcycle Section Coliseum Annex.

American Motor Co., Brockton, Mass. (P2)—M. M.
 Aurora Automatic Machinery Co., Chicago, Ill. (O3)—Thor.
 Detroit Machine Co., Detroit, Mich. (R1)
 Detroit Motorcycle Mfg. Co., Detroit, Mich. (O9)—Detroit.
 Edwards-Crist Mfg. Co., Chicago, Ill. (R3)—Armac.*
 Emblem Mfg. Co., Angola, N. Y. (O6)—Emblem.
 Excelsior Supply Co., Chicago, Ill. (O2)—Excelsior.
 Harley-Davidson Motor Co., Milwaukee, Wis. (O1)—Harley-Davidson.
 Hendee Mfg. Co., Springfield, Mass. (O5)—Indian.
 Merkel Light Motor Co., Pottstown, Pa. (P5)—Merkel.
 Miami Cycle & Mfg. Co., Middletown, Ohio (R4)—Racycle.
 Minneapolis Motorcycle Co., Minneapolis, Ind. (R6)—Minneapolis.
 New Era Auto-Cycle Co., Dayton, Ohio (R5)—New Era Auto-Cycle.
 N. S. U. Motor Co., New York City (O11)—N. S. U.
 Pierce Cycle Co., Buffalo, N. Y. (R7)—Pierce.
 Pontiac Motorcycle Co., Pontiac, Mich. (O8)—Pontiac.
 Pope Mfg. Co., Hartford, Conn. (O4)—Pope.
 Reading Standard Co., Reading, Pa. (P1)—Reading Standard.

Reliance Motorcycle Co., Owego, N. Y. (R2)—Reliance.
 Wagner Motorcycle Co., St. Paul, Minn., (P3)—Wagner.

Motorcycle Accessories.

Bicycling World and Motorcycle Review, New York City (P4)—Publications.
 Eclipse Machine Co., Elmira, N. Y. (O12)—Coaster brakes.
 Motorcycle Publishing Co., New York City (O10)—Publications.

Kansas Trying to Save Smith Factory.

Although the Smith Automobile Co., of Topeka, Kans., is in the bankruptcy court, residents of that city are loath to have the factory lost to them. Some 50 of them held a meeting last week at which F. E. Whitney, who is striving to save the property, outlined plans for a \$1,000,000 company which would pay 7 per cent. cash dividends and a 100 per cent. stock dividend. The meeting, however, did not progress beyond the talking point.

Sales Corporation Adds to Its Accounts.

The National Sales Corporation, of New York, has contracted for and will market the output of "Autobestine," manufactured by the Woven Steel Hose & Rubber Co., of Trenton, N. J. The Sales Corporation has also entered into an arrangement to market the output of portable valve grinding tools made by the Valve Seating Tool Co., of Southport, Conn.

More Room for Aplco Lighting System.

The Apple Electric Co., of Dayton, O., has removed its storage battery and repair department to the Buvinger building in that city, which building is but a short distance from the Apple factory. The removal, of course, affords more room in the latter for the other departments of the Aplco lighting system.

Taxicab and Baggage Wagons Are Merged.

The Detroit Taxicab Co. and Detroit Omnibus Line Co., of Detroit, have consolidated under the title the Detroit Taxicab & Transfer Co. The amalgamation brings together the cabs and the baggage wagons owned by the respective parties, and permits the new company to do both a passenger and a freight business.

Gray-Hawley Buys a Factory Site.

The Gray-Hawley Mfg. Co., of Detroit, maker of automobile accessories, has purchased a site, 80 x 200 feet, on Jefferson avenue, between McDougal and Elmwood avenues, on which a factory will be at once erected; it will double the concern's output.

Republic Locates Branch in St. Paul.

The Republic Rubber Co., of Youngstown, Ohio, has opened a branch at 126 West 6th street, St. Paul, Minn. It is in charge of F. W. Osmun.

Possibilities of the Gasolene-Electric Road Train

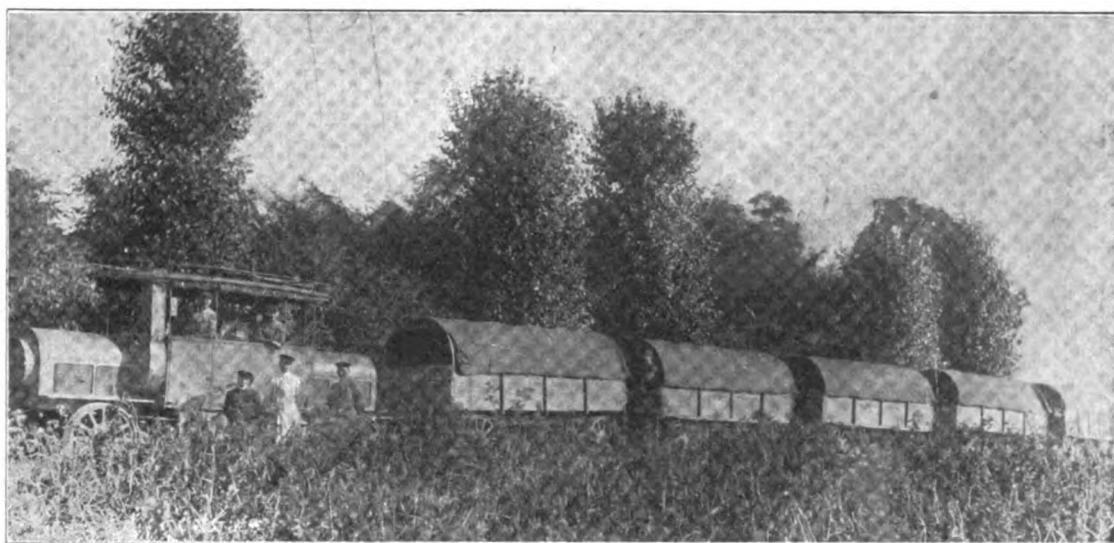
Although the so-called "road train" never has attained much prominence in this country, it is in considerable use abroad, where, in fact, it appears slowly to be gaining increased favor. The only American "train" of the sort that has been produced was brought out some three years ago by the Alden Sampson company, of Pittsfield, Mass. It was of the gasolene-electric type, and though it excited much curiosity at the New York show, where it was exhibited, it soon was lost to view. Since that time the Sampson property has been taken over by the big United States Motor Co., and the

or wheels or springs. As the unit load is reduced and the weight distributed more evenly, the surface of the road is protected.

The new German train with six trailers and the tractor has a capacity load of 30,350 kilograms, or 67,000 pounds. The accompanying illustration shows this train on a 10 per cent. grade, the speed of operation being seven miles an hour. The tractor is equipped with two gasolene motors, one at each end of the chassis, and each coupled directly to an electrical generator.

With these two sets enough power is generated to haul ten electric motor trail-

The current generated in the tractor is conducted by a cable the whole length of the train to the motors of the driving wheels. Separable connections are provided between the vehicles. The truck frames on the trailers, as well as the tractor, are all alike, consisting of steel frames resting on one-axle bodies at each end, each carrying an electric motor with driving gear for two wheels, the tractor differing only from the trailers in carrying the engine generator sets and the propelling equipment being similar in all. The driving gears comprise a differential countershaft with



MULLER GASOLENE-ELECTRIC ROAD TRAIN CLIMBING A TEN PER CENT. GRADE

fact, that within the last month the latter company has announced that the Sampson road train is again to be taken up and its sale prosecuted, lends point to the subject at this time and not unlikely a "trackless train" hauling freight on American roads soon may become a not unfamiliar sight.

The most recent invention of the sort is of German origin and is shown by the accompanying illustrations.

It is somewhat similar to the parent system, developed by Colonel Renard, of France, and bearing his name, the Renard train comprising a train of vehicles with the power generator, speed control and steering apparatus mounted upon the first one, a shaft arranged with the proper number of universal and slip joints extends the whole length of the train, transmitting the power for propulsion to the driving wheels of each vehicle. With this multiple unit road train, a large load may be carried without employing excessively large individual vehicles, which cause rapid deterioration because of the inability to use resilient tires

ers of 5,000 kilograms' capacity each, or a total load of 50,000 kilograms, or 110,000 pounds.

Electric transmission of power is utilized between the gasolene engine sets and the driving wheels, and the power is transmitted from the tractor to each pair of wheels of the trailers. As it is necessary not only to drive the tractor wheels, but also those of the trailers, the energy developed by the motors is transformed to electric energy and supplied to electric motors on the trailers.

Between the two motors on the tractor is built a cab where the driver controls the levers operating and steering the whole train. The gasolene engine dynamo outfits are two separate and independent sets, and they are employed together or separately for supplying current to the motors of the trailers as the length of the train, the load or the conditions require. The devices for regulating the dynamos allow of varying the working pressure from zero to a maximum in a very gradual manner.

two chain gears similar to those commonly used on heavy load electric automobile trucks.

Sharp turns are taken easily and with a comparatively small angularity of axle by means of an arrangement on each pair of wheels. Two bogies are coupled on each trailer in such a manner that the turning of one pair of wheels will produce a turn of equal extent, but in the opposite direction, on the other pair.

When it is desired to handle a road train of six trailers, a Muller tractor is provided, having two motors developing from 75 to 90 horsepower each. With this total of 180 horsepower a train of 66,000 pounds can be handled at a rate of 10 miles an hour. The trailers are five meters, or 16 feet 5 inches in length, and a space of 1.1 meters is left between them, making the train 42 meters, or about 138 feet long, and a maximum load upon the axles of 4,000 kilograms, or about 9,000 pounds.

Two independent steering gears, one for each axle, are arranged on the tractor, as

all tractors and trailers are built to run equally well in either direction. One, or the other, or both, of the axles may be steered as desired, and the necessity of turning the train around is eliminated. The tractor may be located at any position in the train, so that shifting may be carried out as on any steam railroad, the entire steering of the train being controlled by the driver in the cab, no other men being required.

The couplings between the trailers are mechanical and so designed that they serve for operating the positive steering of the electric motor trailers in the direction determined by the operator of the tractor, and allow the whole train to travel backward or forward.

Light tractors and trailers are also de-

faces cannot be burned. The starting and varying of the speed is controlled entirely by the excitation of the dynamo, that is, by operating the shunt regulator of the electric generators in which there are currents of comparatively low tension only, a regulation which is safe and reliable thus being obtained.

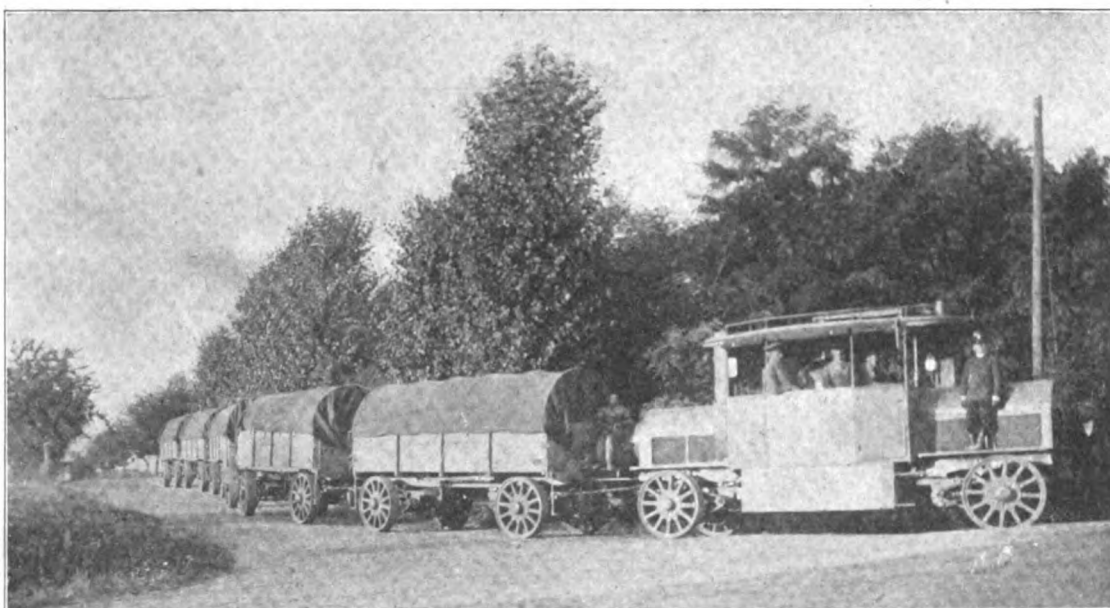
The starting effected in this manner is claimed to be as noiseless and steady as when the steam valve is opened gradually on a locomotive. Electric brakes on the entire train are put into operation in the same way, so as to afford perfect control by the driver in a uniform manner on all wheels. For mountainous sections a continuous electric brake acts on all four wheels.

The trailers with their electric motors

nished by the tractor. The cars are equipped with six wheels, three pairs, and the driving is done from the center pair which are 54 inches in diameter. As one-half of the gross load is carried by these large wheels, the steering wheels are smaller, 42 inches in diameter, allowing a wide steering angle and lighter construction.

The car platforms are 17 feet long by 4 feet 2 inches, are 4 feet high, and each car weighs 7,000 pounds. The power is generated by a gasoline motor driving a dynamo which furnishes current to the two motors on the tractor, as well as on each of the trailers. As each wheel is driven independently, the use of a differential gear is unnecessary.

The train is easily controlled by one man. The cars are steered by a tongue



MULLER ROAD TRAIN AND TRACTOR ROUNDING A CURVE

signed by the Muller Strassenzug-Gesellschaft, of Steglitz, near Berlin. Their heavy train here illustrated with a 66,000-pound load runs seven miles an hour with two motors of 50-60 horsepower each.

On tractors hauling trains of comparatively small load, from 13,000 to 20,000 pounds, an engine is provided that develops from 31 to 50 horsepower to drive the electric generator. This train is capable of 10 miles an hour for a load of about 10,000 kilograms, or 22,000 pounds, and of a daily service of 80 miles in 10 hours.

For starting these gasoline-electric road trains the driver may use one or both of the engine sets as desired, according to the load and grade. With the aid of the set started first, the second may be started or cranked at any time. The main switch is provided with connections for "Forward," "Stop," "Brake" and "Backward." As this device can be operated only when the dynamos are free of tension, the main switch is opened or closed when the wires and cable carry no current, so that the contact sur-

can be operated independently from distances of about 300 meters without the tractor moving at all. This is possible because of a flexible conducting cable on each train, and it facilitates greatly the shifting.

It is claimed also for this German train that it will travel on any soil and on the steepest grades, having equal tractive power on all of the driving wheels and an equal load on all the electric motors; that the cost of operation is very low, being about 41 cents for a load of 30 tons, or a trifle over 1 cent per ton kilometer.

Also adhering in principle to the Renard system, several other automobile road trains have been built, notably the Alden Sampson train, made in this country, and one produced by the Daimler Motor Car Co., of Coventry, Eng.

The Alden Sampson multiple unit road train was first produced in 1908 in their factory at Pittsfield, Mass., and consists of two cars and a tractor, each car having a capacity of six to eight tons and carrying its own motors. The power is fur-

from the rear of the tractor to the axle of the first trailer and from the rear of each to the front axle of the following. The wheels always track, being connected so that in rounding a curve all six wheels follow true concentric radii.

Although the automobile road train is not as yet familiar in this country, it has proved successful as a means of transporting at low cost very large loads. At the present time a Daimler road train is performing regular service between Birmingham and the Daimler works, Coventry, and does it 50 per cent. cheaper than the lowest rates quoted by the railroad companies. This particular train easily carries a load of 15 or 20 tons.

Another Daimler road train recently was installed in Vancouver, B. C. It consists of a tractor and four trailers, and is owned by the Canadian-Renard Road Train Co., Ltd., of Vancouver. The tractor is equipped with a 100 horsepower Daimler silent Knight engine, and is capable of pulling 40 tons at six miles an hour.

Shock Absorbers and the Important Parts They Play

Although shock absorbers have made great progress during the past three or four years, the number of motorists who have yet to learn the value of such devices remains considerable. Spring suspensions of themselves have undergone no small improvement but the fact remains they require some added means to check their rebounds which are the causes of more distress and discomfort in the course of a day's travel than usually is pleasant to contemplate. Many motorists accept the jolting as a necessary evil, apparently unaware that at least the worst of it can be avoided by the use of shock-absorbing devices, and comparatively few dealers seem anxious to afford the demonstration that so often results in increasing the good opinions of the cars they sell. It is a fact that the first time many persons begin to appreciate the difference made by at least a partial reduction of the rebound is when the rear seats of their cars contain more or heavier passengers than is their usual complement. The added weight of itself adds a degree of that comfort which is obtainable by the use of shock absorbers at all times and which seldom fails to excite remark.

The development and growth of the shock absorber and the part it serves were well sketched at the recent meeting of the Society of Automobile Engineers by E. V. Hartford, of the Hartford Suspension Co., who, to give him his due, has done so much to awaken the trade and public to the necessities of the case and to the benefits of shock-absorbing devices in general, even though in doing so he has been intent on advancing the Truffault-Hartford in particular.

"Shock absorbers were unknown prior to 1900," said Mr. Hartford in the course of a paper read at the Engineers' meeting. "In that year I returned from France from a protracted visit, and the automobile industry was still in its infancy, but considerably further advanced in France than in this country. With Mr. Truffault I had gone into this subject extensively, realizing how essential some restraining device was to the springs of the car as they were then constructed. Mr. Truffault had applied the basic principle of the shock absorber to the front fork of a motorcycle. His idea as to its application to a motor car involved great complications and made a radical change in the suspension of a motor car. I looked at the matter more broadly and was responsible for the three-point friction device as it is used on the majority of automobiles today. This is the ex-

planation of the name—Truffault-Hartford.

"Mr. Truffault applied it to a spring fork of a motorcycle, and I made it feasible for the automobile. About the year 1900 we applied the first set of shock absorbers to a small runabout.

"While I convinced myself and my friends of the absolute necessity of our device, the manufacturers were too much engrossed in building an engine that would enable a man to spend more time in his car than under it, to be diverted long enough to take up the question of improving the riding qualities. In those early days a man was lucky if he could keep his car going at all, and if he got home without difficulty he considered himself fortunate, no matter to what physical discomforts he had been exposed. It was not until Leon Terry won the Gordon Bennett Cup in 1903 and described his ability to defeat cars of far greater horsepower by the fact that his car was equipped with our shock absorbers which enabled him to maintain high speed over all conditions of the road that our device began to receive recognition. Since that time its progress has been continuous, and at the present time we are equipping almost all the best cars manufactured in this country and abroad.

"Springs of motor cars which were primarily intended for at least comparative high rates of speed involve conditions not found in horse-drawn vehicles or railroad cars, although the general construction of the spring is practically the same. Therefore, while conditions as far as the vehicle is concerned are widely different, but little change has been made in the springs. Railroad cars travel at high speed but they run upon an even and comparatively unresistant roadway. Horse-drawn vehicles, although built for the ordinary highways over which the automobile must travel, are rarely calculated for more than moderate rates of speed. Railroad trains must, therefore, contend against a maximum speed over a minimum road roughness; while horse-drawn vehicles on the other hand have only to provide against a maximum roughness with a minimum speed. When we come to the automobile we have to provide for a maximum speed as well as a maximum road roughness.

"To be thoroughly serviceable, a spring should possess two essential qualities in due proportion—resistance and resilience. That is, a spring should move from its idle point very quickly and should be so constructed that under unusual stress and strain heavier and stronger portions of the springs should be brought into play.

"When we first began to apply shock absorbers to automobile springs we found a great many springs that were so stiff and heavy that the shock absorber was practically useless as applied to them, but gradually the spring makers have increased the flexibility of the springs until now there are several manufacturers that are turning out cars with springs of extreme flexibility combined with shock absorbers which are giving almost ideal results.

"Speaking broadly, to obtain an extremely flexible spring it should be built of a large number of thin leaves, say twice the number that is in the ordinary spring. The top leaf should be of the ordinary thickness, as this has to carry the bearing which attaches it to the shackle or frame. By making three or four of the lower leaves a little heavier and placing them at a different angle, they will be brought into play under the stress of a heavier load and rougher roads. A spring so constructed would be practically useless on an automobile to be driven at high speed without the use of shock absorbers, but this is just the point that I want to emphasize here, that shock absorbers permit the use of a very flexible spring.

"If the automobile manufacturers would equip their cars with springs such as I have described above, and would depend on the shock absorber to control them, we would get riding qualities in cars that have hardly been dreamed of up to the present time. The trouble is the manufacturers build the springs to be used without shock absorbers, and they would argue that if they built such a spring as I have described, that it would not last on a car a mile over a very rough road, because its extreme flexibility would allow the car to carry the top leaf far past its normal limit and to the breaking point. It is one of the offices of the shock absorber to keep the spring, no matter how great its flexibility within its normal working limits, and as long as the shock absorber is working, it is practically impossible to break a spring.

"Some critics who are antagonistic to shock absorbers have argued that they stiffen the springs. I will give you an illustration, and you can judge for yourself as to how much this stiffening amounts to and how little increased flexibility in building the spring would be necessary to compensate for this.

"Say the suspended portion of a car weighs 4,000 pounds, put 1,000 pounds of passengers in this car, and we have each spring supporting a weight of approximately 1,250 pounds. The friction on the

shock absorber measured at its points of attachment to the axle and the frame, the same points of attachment as the spring itself, is only about 30 pounds, which is all that is necessary to control this spring. This is only a trifle over 2 per cent. of the carrying of the spring, and I am sure that this will be a great surprise even to those antagonistic critics.

"Many copies of the original invention that have come upon the market have missed the real idea of the shock absorber entirely, and as a rule are not really as good as a rubber bumper and a strap, for they limit the play of the spring, and to obtain easy riding qualities over the roughest roads great play of the spring is necessary.

"If some of you have ridden in cars that have been extremely easy riding, if you will examine the same again you will find that they have a spring play of at least 10 or 12 inches. As a matter of fact, in theory if we made the spring play say six feet, we would come pretty close to riding across country taking ditches and stone walls. A little experiment which I will describe to you will probably convince you of the reason why I claim that some of these competitors have entirely missed the idea of the shock absorber.

"Put a long flat piece of steel in a vice and hold one end of it firmly; compress this steel and let it go. It will vibrate hundreds of times until it comes finally to rest. Press some smooth object such as a wooden hammer handle lightly against one edge of this piece of steel and it will come instantly to rest, and the piece of steel is transformed from a vibratory instrument into a perfect cushion. This is the real secret of the shock absorber in a nutshell, and if you seriously think this problem out for yourselves after making this experiment, I do not see how you can come to the conclusion that any spring could possibly be devised which could do the same wonderful work as the flexible steel spring combined with the constant friction shock absorber.

"Rough roads are inevitable, and even when roads are fairly smooth there is a constant spring movement caused by the ordinary crosswalks, car tracks or other obstacles. Crossing these the car pounds down on the axle, acting like a tremendous hammer coming down as far as the four springs will permit; then comes the rebound and the springs are taxed to their limit in the other direction, and, therefore, while traveling over rough roads the springs are constantly contracted and expanded, not slowly and harmlessly, but violently, causing considerable discomfort to say nothing of the wear and tear on the parts. Of course, one may bring the car to almost a halt, but here again comes in another feature of the Truffault-Hartford shock absorber—the lack of the necessity of constant braking which is always a

strain on the car, and when constantly and violently performed produces great wear on the tires. Not only does the shock absorber save this by reducing the necessity of braking to a minimum, but when traveling over rough roads at a fair speed with uncontrolled springs the car frequently leaves the ground—sometimes in front and sometimes in back—and a very prominent manufacturer recently advertised his car going at high speed over an inequality in the road where the four wheels were off the ground at the same time. Obviously under these conditions the return of the wheels to the ground causes a tremendous strain particularly noticeable on the tires, but a strain far more important, but possibly not as noticeable at the time, on the chassis of the car and on all its working parts. The Truffault-Hartford shock absorber stops all this. It is interposed between the body and the axle, and acts as an auxiliary to each spring, not for a moment detracting from its flexibility. As the spring action of the car determines its riding qualities, the merit of the device can be readily understood.

"I believe it is a matter of record that a very large proportion of all the car troubles are caused from the wear and tear which shortens the life of a car, and this wear and tear is due to excessive vibration caused by the character of the roads and by unrestrained spring action. The racking to which an automobile is subjected in traveling over the ordinary high roads will jar loose in a very short time every nut and bolt in its entire make-up, providing the springs are allowed to go uncontrolled, but if properly controlled in such a manner as to prevent their violent expansion and contraction, there is no excessive oscillation and their efficiency is not in any way impaired. This reduces the racking of the car to a minimum. There is less wear and tear; less bouncing of the wheels, thus prolonging the life of the tires. We think the tire manufacturers concede that it isn't the wear that makes the tire upkeep so expensive, but it is the tear, or in other words, abuse. In addition to all these a car is capable of greater speed, and there is always smooth running, irrespective of the conditions of the roads. The construction of the Truffault-Hartford is such that racking, swaying, jolting, jarring and vibration are eliminated and comfortable motoring is assured. There is no lost power, and every atom is conserved with the attainment of greater and smoother running made possible with a material decrease in the cost of the upkeep.

"Just one thing more. Possibly there is no better known expert than Mr. S. F. Edge, the British engineer, prominently identified with the Brooklands Track, who, in an article before the Midland Automobile Club, of Birmingham, Eng., recently gave as his opinion that the advantages of using road equalizers, as he described the

shock absorber, were not sufficiently appreciated by the ordinary motor user. A properly designed device of this sort he states enables one to have much lighter springs and to obtain the benefit of these light springs when running over rough roads, and yet the equalizers keep the springs under proper control when traveling very fast. They also reduce the wear and tear on tires by reducing the amount of jump from the ground and similarly very materially reduce the wear on the entire mechanism of the car. Mr. Edge concludes by saying that anyone who will try a properly constructed device of this kind will be amazed at the difference in running.

"That there could be no doubt of this we demonstrated thoroughly in the early stages of our development by maintaining two cars of a similar make and model—one equipped with and the other without shock absorbers, the result of which experiment left absolutely no question as to the integrity of our claims."

Butterfly Valve to Assist Starting.

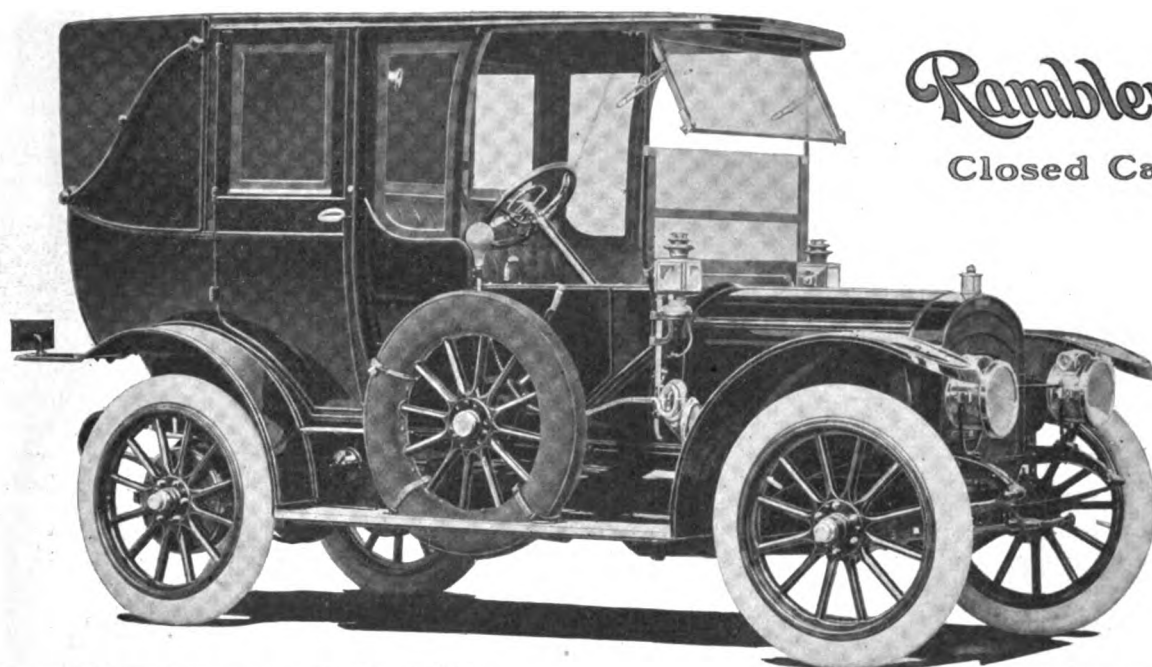
When difficulty is experienced in starting a motor during cold weather, the proper use of a butterfly valve in the air port often will expedite matters. Carbureters not originally provided with such an arrangement may be fitted with an extra choke valve without much difficulty. A wire should be run from the valve through the radiator of the car, so that when cranking, the air may be shut off temporarily and gasoline allowed to vaporize more thoroughly until the engine is warmed up. The "handiman's" method of accomplishing the same object, that is to say, of enriching the mixture temporarily, is merely to stuff a bunch of waste into the port while the engine is being cranked, snatching it away hastily at the crack of the first explosion.

Swivel Searchlight for "Trouble Wagon."

An electric lighting company in Dayton, Ohio, is making novel use of a commercial wagon. It is employed for repair work and is provided with a swivel searchlight operated by electricity. A high candle power tungsten lamp is contained in the projector. The purpose of this equipment is to facilitate locating trouble on the overhead lines at night, and to afford a strong light by which repairmen can work to advantage at the top of 50-foot poles. The safety of a quick night run to the point of trouble is increased, as the rays can be projected around curves before reaching them and also assist in preventing collisions with wagons that carry no lights.

How Ball Bearings Should Be Adjusted.

Ball bearings should be adjusted so that there is a very little play or slack. The proper amount usually is secured by turning the ball cone back about a third of a turn after having first turned it up until it is snug.



Rambler
Closed Cars

Rambler
Sixty-three
Town Car

WITH a closed car the charm of motoring may be enjoyed throughout the winter. Daily rides may be taken in comfort, regardless of the weather. Necessary errands become a pleasure. With storm curtains between the glass front and cab seats, protection is afforded all passengers. On pleasant days the top may be folded back. The Spare Wheel eliminates worry about tire trouble. It can be so easily and quickly changed, regardless of snow, water or ice. The thirty-six-inch wheels with $4\frac{1}{2}$ -inch tires; seven-eighths rear springs, with shock absorbers, produce gratifying comfort. The trimming is leather inside and out. Seating capacity seven. Flexibility provided by the offset crank shaft and straight-line drive, that permits operation in high gear no faster than a man usually walks, particularly adapts this car to town use.

Rambler closed cars are made in landaulet, limousine, town car and coupe styles. You may inspect them at Rambler branches and dealers stores in principal cities.

The Thomas B. Jeffery Company

Main Office and Factory, Kenosha, Wisconsin
Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco

New York Dealers: The Rambler Automobile Co.
of New York, 38-40 West 62nd Street, New York

RECENT PATENTS.

975,399. Starting Means for Vapor Rectifying Devices. Frank Conrad, Swissvale, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed Sept. 20, 1906. Serial No. 335,527.

1. A vapor rectifying device for alternating current comprising a receptacle for the vapor a negative terminal, and an auxiliary terminal, in combination with means for causing electrical discharges between the auxiliary and negative terminals, said means comprising inductively related primary and secondary circuits the latter of which is connected between the negative and auxiliary terminals, a condenser in the secondary circuit, and means for opening the primary circuit after the rectifying process has begun.

975,414. Wind Shield. Joseph Hadka, Chicago, Ill. Filed May 2, 1908. Serial No. 430,450.

1. A sectional shield for vehicles comprising a lower rectangular shield section

consisting of a panel and stiles formed of tubes, each tube having a longitudinal slot in its inner side, and said panel being secured to said tubes at one side of said slots; an upper shield section consisting of a panel and stiles, the stiles of the upper shield section lying within and being guided by the tubular stiles of the lower section, the vertical edge portions of the upper panel lying within the slots of the lower stiles, the lower stiles and the lower panel being of substantially equal height, said lower stiles serving to hold the upper shield section rigidly against lateral movement out of a vertical plane parallel with the plane of the lower panel and means for securing the upper shield section in operative position.

975,567. Apparatus for Starting Gas Engines. Charles H. Oslund, Worcester, Mass. Filed March 16, 1900. Serial No. 483,694.

1. In a device for starting gas engines, the combination with the gas engine, of a receptacle for gas under pressure, a cylinder for receiving a charge of gas from said receptacle, and a valve having passages

for simultaneously disconnecting said cylinder from the gas receptacle and connecting it with a cylinder of the engine.

975,579. Spring Construction. Watson R. Smith, Jackson, Mich., assignor to Jackson Cushion Spring Co., Jackson, Mich. Filed July 30, 1909. Serial No. 510,476.

1. In a spring construction, a frame, main springs in the frame, auxiliary springs arranged for co-operation with the main springs to catch and sustain extra weight, sets of links connected to the main springs, each set of main spring connecting links embodying one link provided with an integral eye with which the inner ends of the remaining links of each set engage.

975,583. Clutch. Robert Symmonds, Jr., Kenosha, Wis., assignor, by mesne assignments, to Kate E. Jeffery, Charles T. Jeffery and Harold W. Jeffery, executors of Thomas B. Jeffery, deceased. Filed May 3, 1909. Serial No. 593,501.

1. In a clutch, a drum, a spider adjacent to said drum, a friction shoe lying in proximity to said drum and connected at one

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PROTECTOR OF INNER TUBES



"CASETTE" is made of our special Gutta-Percha felt and is practically non-puncturable. Being loose at the inner tread is an important factor, as this allows a slight depression on the air tube at the point of contact with a sharp object. The "CASETTE" engages the object at this instant, and the wheel, turning, gives an oblique pressure on the sharp object and the air tube is protected. It is easily inserted and the low price commends it. *Everybody wants it.*

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end to said spider, a rock shaft journaled on said spider and extending transversely of the axis of said drum with one end lying adjacent to the free end of said shoe and the other end extending toward said axis, actuating means for said shoe arranged between the free end thereof and the adjacent end of the rock shaft, and means for oscillating said shaft.

975,616. Ball Bearing. Henry Hess. Wawa, Pa. Filed Oct. 19, 1907. Serial No. 398,181.

1. In a ball bearing, the combination of the casing members formed with tracks or ways and substantially inelastic and non-deformable load-bearing balls located therein, together with elastic and deformable spherical separators interposed between the load-bearing balls, the said separators being capable of introduction into and removal from the tracks or ways by elastic deformation.

975,767. Demountable Wheel Rim. Raymond Healy, Brooklyn, N. Y. Filed April 17, 1909. Serial No. 490,559.

1. In a device of the character described, the combination with a wheel, a felly fixed to said wheel, a demountable tire-holding rim, a felly fixed to said rim, a plurality of transverse metallic bands fixed to said rim felly provided with surfaces at each side inclined to the inner periphery of the felly and clamping means secured to said wheel felly and adapted to engage the inclined surfaces of said transverse bands.

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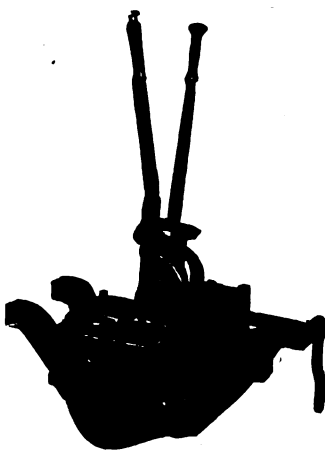
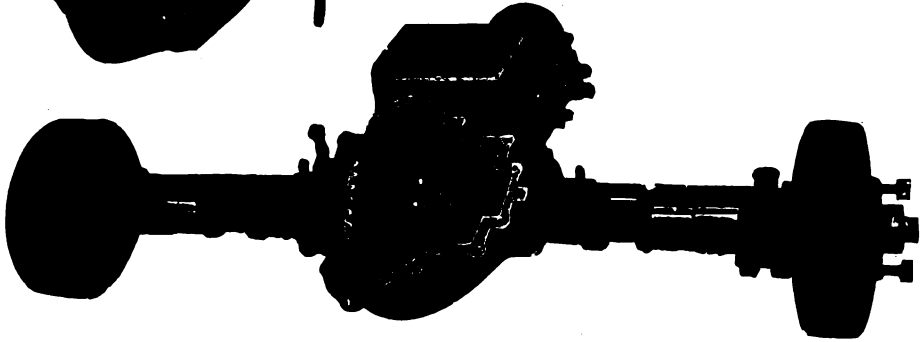
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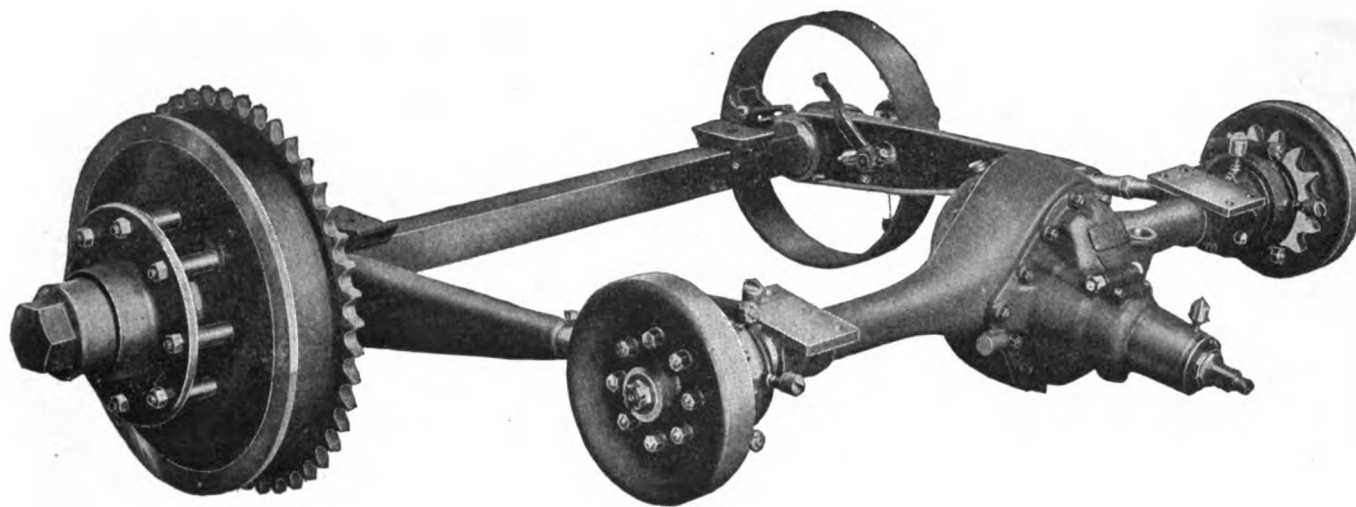
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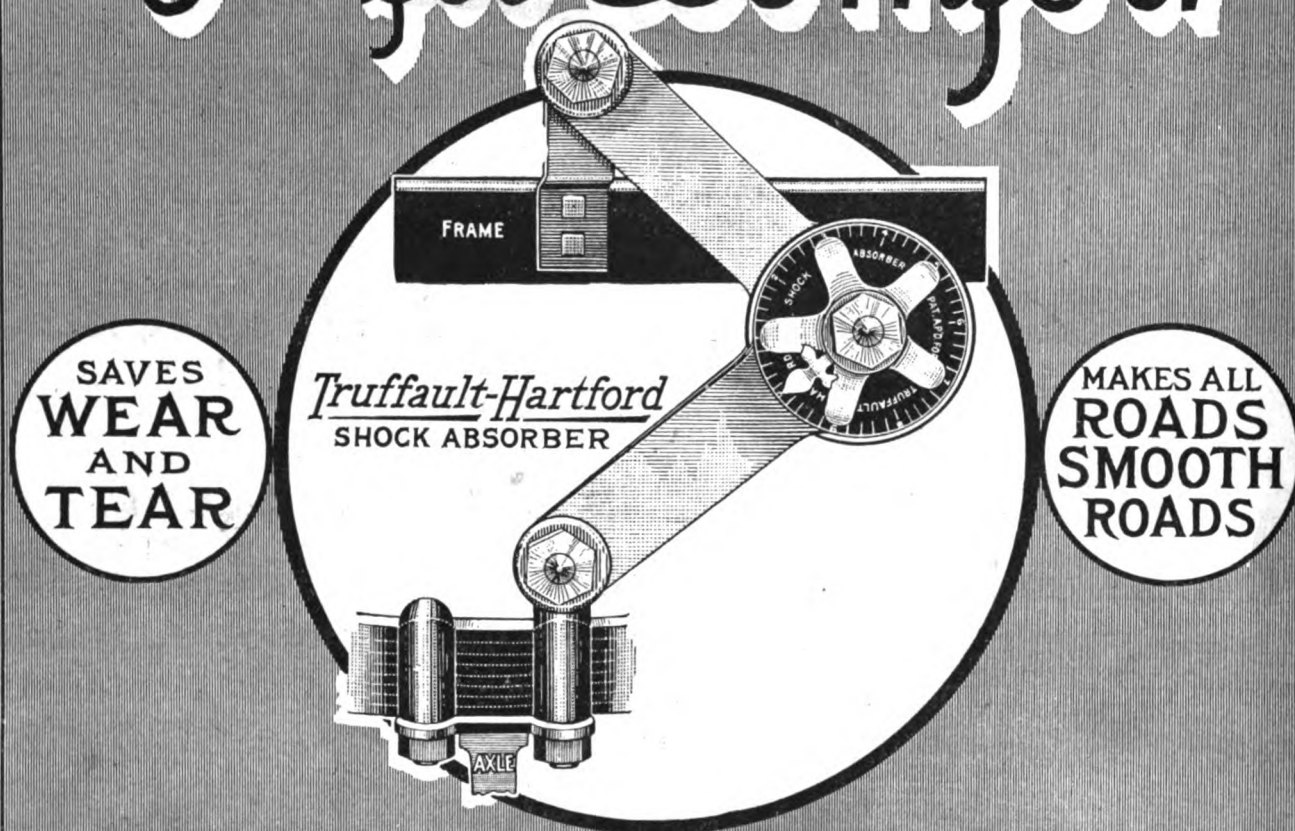
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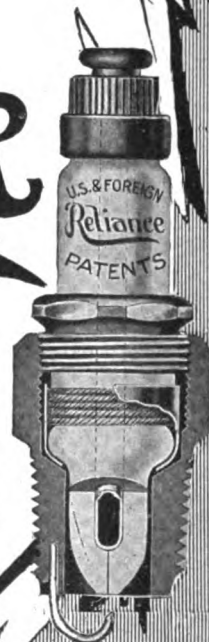
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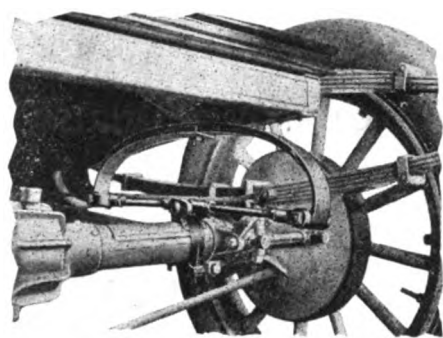
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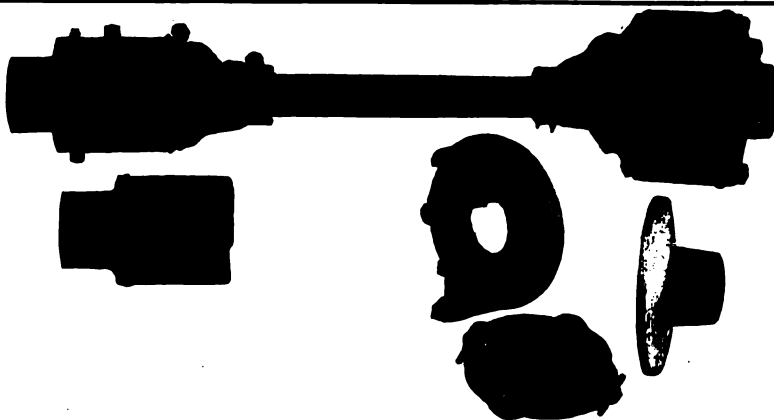
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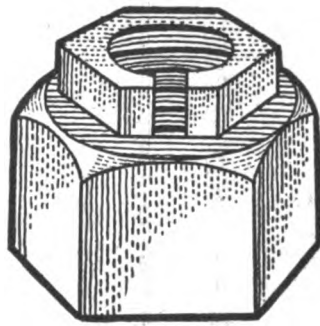
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¶ Die cast from Parson's white brass
make the finest kind of engine
bearings.

¶ Absolutely accurate and every one
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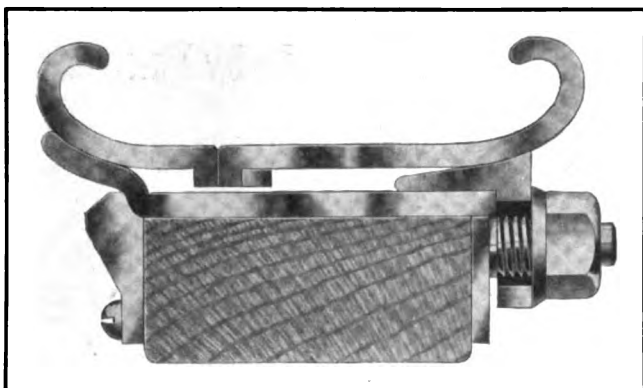
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THE STANDARD UNIVERSAL QUICK DETACHABLE DEMOUNTABLE No. 3

For Clincher Type Tires Only

This rim is in effect a Standard Clincher Rim that has been made separable. A number of L shaped frets extend around the inner edge of one section, which correspond to a number of raised lugs or teeth on the other section. In assembling, these two sections are brought together so that the frets and lugs are in a position to engage. A slight rotary movement then completes engagement and a definite lock is accomplished by means of a spring hinge device. The rim is mounted on a well-known and popular demountable equipment and, as a whole, is strong, thoroughly safe and always dependable. It stands the test of service.

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PIONEER RIM MAKERS

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Our Transmission and Steering Gear Departments will continue as heretofore only with facilities increased many times.

We are preparing a line of Transmission, Steering and Differential Gears for trucks and delivery wagons and will work up this branch of the business, which for lack of facilities we have been unable to properly do heretofore.

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Both plants will be under the same management and selling organization; the stockholders of the Brown-Lipe Gear Company holding a controlling interest in the new company. Both factories at Syracuse, N. Y. High quality and prompt service is our motto.

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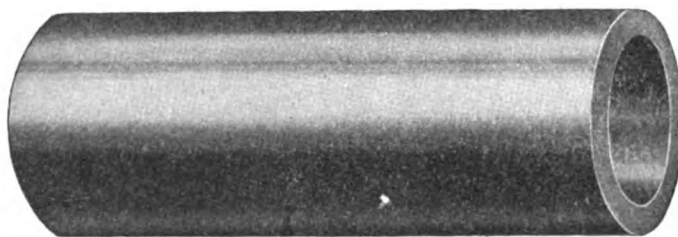
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Elastic Limit per Square Inch,	120,000 "	139,500 "
Elongation in 2 inches,	18½ %	15½ %
Reduction of Area,	48 %	42½ %

This tubing can be used to advantage for **BRACES, SUPPORTS, AXLES, SHAFTS, ETC.** Ordinary Tubing is made from Steel which would only show about **60,000 lbs. Elastic Limit** when toughened.

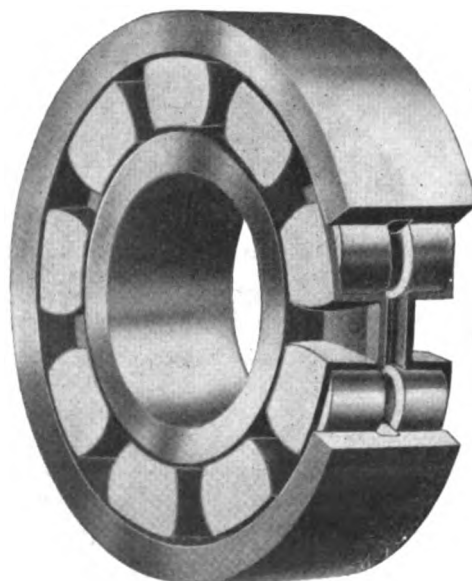
BECKER STEEL COMPANY OF AMERICA

SALES AGENTS IN UNITED STATES FOR
Stahlwerk Becker A. G., Willich, Germany

**90 WEST ST.
 NEW YORK, N. Y.**

STANDARD ANNULAR ROLLER BEARINGS

Capable of 50 per cent. greater load than same size annular ball bearing.



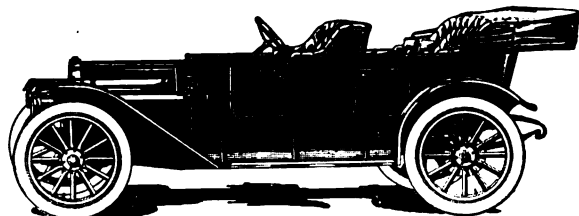
Made in sizes interchangeable with all standard annular ball bearings.

See Our Exhibit, Space 4, Gallery, Coliseum, Chicago

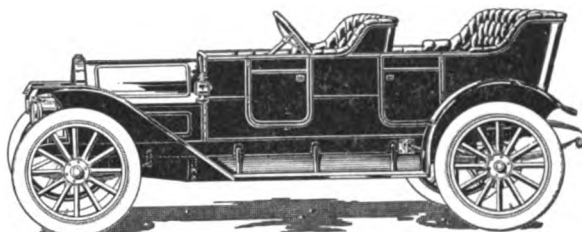
STANDARD ROLLER BEARING COMPANY, Philadelphia, Pa.

THE ELIMINATION OF EXTRAVAGANCES

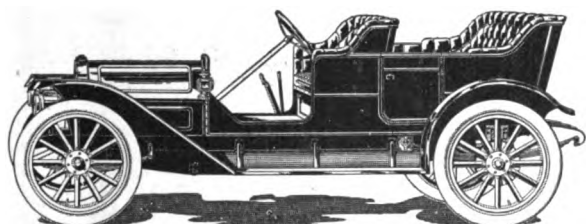
now is in process in the automobile business. There are a lot of them for which the purchasers of automobiles have paid high and which brought them no return. It was by avoiding these extravagances, these costs of high living, so to speak, that DeTamble cars were placed on the market at prices that set a new standard of values. You can't pay more and get your money's worth. Study the specifications.



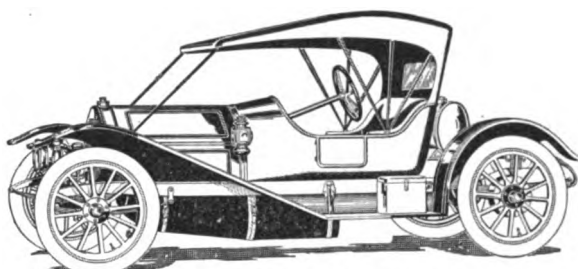
Model K—7-Passenger Fore Door—\$1,675.



Model J—5-Passenger Fore Door—\$1,200.



Model H—5-Passenger Touring Car—\$1,150.



Model G—2-Passenger Roadster—\$1,000.

MODEL K 40—45 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; full floating ball bearing rear axle; 120-in. wheel base; 36-in. wheels; Splitdorf magneto; dual ignition; Rushmore gas lamps; Prest-O-Lite tank; three oil lamps; horn; mohair top; wind shield; speedometer; tools; jack and pump.

SPECIFICATIONS:

MODELS G-H-J—36 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; semi-floating ball bearing rear axle; 115-in. wheel base; 34-in. wheels; magneto and dual ignition system; Rushmore gas lamps; generator; three oil lamps; tools; jack and pump.

Catalog and full details of our complete line sent on request. Open territory proposition for live dealers.

THE De TAMBLE MOTORS CO., Anderson, Indiana

The Pioneers to Employ 92%
of Balls in the Raceway



SCHAFER Ball Bearings Fear No Comparison

AXIAL PRESSURE Thrust capacity of SCHAFER BEARINGS being equal to one-third the advocated load, the thrust capacity of all other makes of bearings being equal to only one-quarter of their advocated load—and since our advocated loads are far greater than those of any other known ball bearing—SCHAFER BEARINGS enjoy a 60 per cent. greater thrust capacity than all other makes. May we prove this to you?

WRITE FOR CATALOGUE

SOLE IMPORTERS

BARTHEL, DALY & MILLER, 42 Broadway, New York City

Inter-State

THREE years ago we built the first Inter-State. When our big factory was completed we gathered there some of the greatest Automobile Brains in the country. We paid for these brains, as we paid for the very finest factory construction; we installed the highest type of machinery.

All this spelled permanency—stability. It was not a venture else we would have bought a cheap plant and cheap brains. We would have hurriedly built our cars to supply the "motor-car mad."

The reaction proved fatal to those of the fraternity, who in a "get-rich-quick" frenzy to supply an unhealthy market, fairly "threw" their cars together and whizzed them to the dealers.

The "assembled" cars are suffering keenly. As we predicted three years ago, the car manufactured under one roof and under the supervision of one corps of experts is the popular car today and for the future.

The Inter-State is painstakingly built *in our own factory*. We have sufficient capital to supply our raw materials, to buy the *best*, to be content with a fair margin of profit.

As an evidence of popularity of our "high-quality-sane-price idea," four more acres of factory floor space have recently been built for the logically increased output of Inter-States.

New catalog M. W. 22 upon request.

Inter-State Automobile Company
Muncie, Indiana

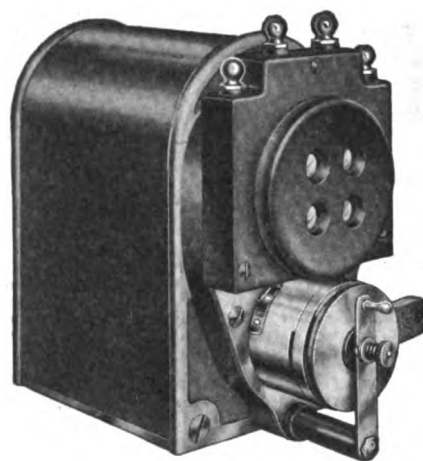
(78)

*Model 34—4-passenger, 40-h. p. Torpedo
\$2,000. Special equipment*

Wonderful Efficiency At Slow Engine Speed

CONNECTICUT

MAGNETO



We have designed this magneto so that it is **THOROUGHLY EFFICIENT** at very slow engine speed—a feature which every motorist will appreciate.

A quarter turn of the crank starts the motor. This magneto has all the good features of the best foreign machines with **NONE** of their faults—and it has exclusive features, little refinements, not found in any other magneto.

When you consider that the **CONNECTICUT** is thoroughly reliable and efficient at slow engine speed, when you realize that it is very simple in design, when you know that it is positively the best magneto made—it becomes a necessity.

CONNECTICUT magnetos are to-day recognized as superior to anything on the market. We have proven this to the satisfaction of eminent automobile engineers. You have no conception of the remarkable advantages which the **CONNECTICUT** offers—therefore, we ask you to become better acquainted—just write for catalog No. 54.

CONNECTICUT TEL. AND ELECTRIC **COMPANY, INC.**
20 Britannia Street **MERIDEN, CONN.**

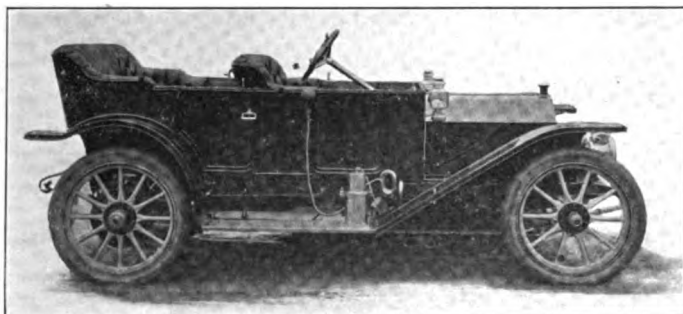
PACIFIC COAST BRANCHES:

San Francisco, 544 Van Ness Ave.; Los Angeles, 1038 So. Main St.;
Seattle, 924 E. Pike St.; Portland, 329 Ankeny St.

Pullman

AUTOMOBILES

For 1911



Model O Pullman Vestibuled Touring Car.

The Reason of Pullman Success

is not due to the fact that our engineers have discovered any *wonderful ideas*, nor at any time since the first Pullman car was built, have any radical or untried stunts been introduced. From its inception, the Pullman Co. has adhered to one fixed policy, namely, building the best automobile possible. Pullman automobiles are well and favorably known. They have never had an off year. Our aim has always been to not only keep abreast of the times but to so equip and manage our organization that Pullman automobiles could be manufactured and sold more advantageously than any other car.

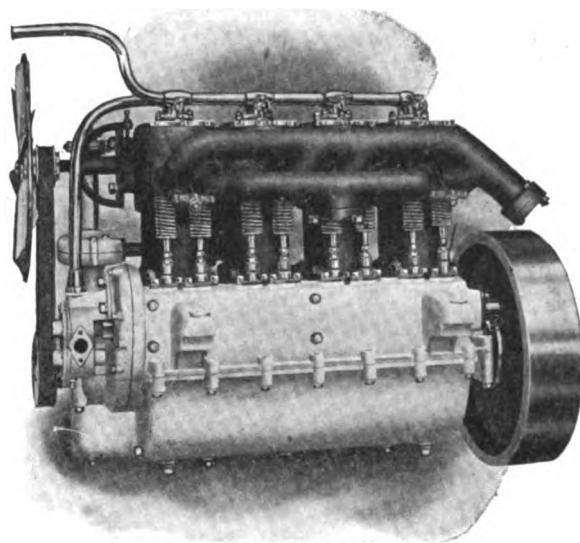
Our complete line will be on exhibition at the Chicago show, Space D-3 in the Armory. Many Pullman agents will be there and you should not lose this opportunity of making their acquaintance. They who sell our product are best qualified to speak of the agency possibilities.

PULLMAN MOTOR CAR CO.

Licensed under Selden patent.

Drawer W

YORK, PA.



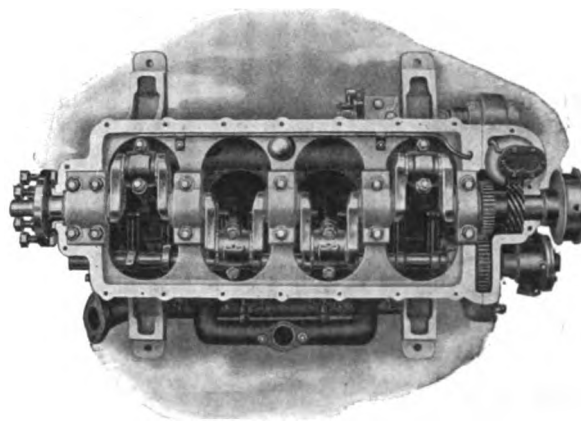
RUTENBER

MOTORS

Are the Talk of the Show

Many contracts have been closed for quantities of motors to be supplied to commercial and pleasure car manufacturers. The RUTENBER motor was only selected on account of its being so far superior in design and construction and workmanship and from having the record of the past of being a motor that was equal to any circumstances.

Every Motor Guaranteed for Life

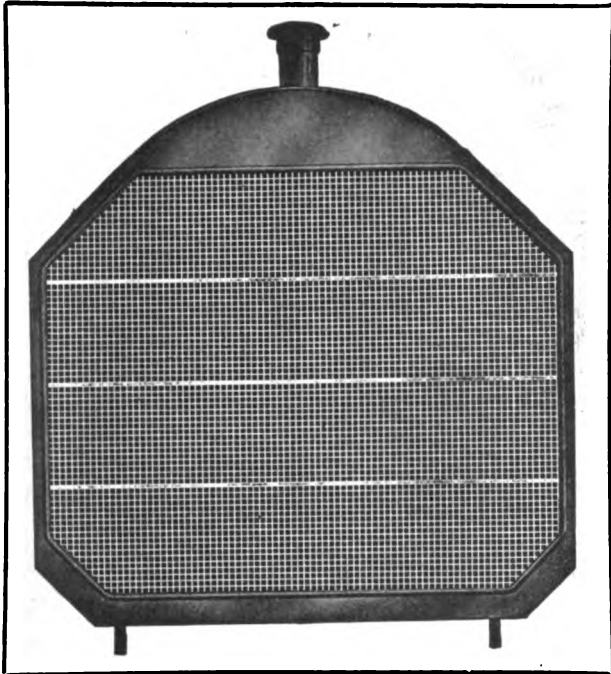


THE WESTERN MOTOR CO.

MARION and LOGANSPOUT, INDIANA

Address Sales Dept. R, Marion, Indiana

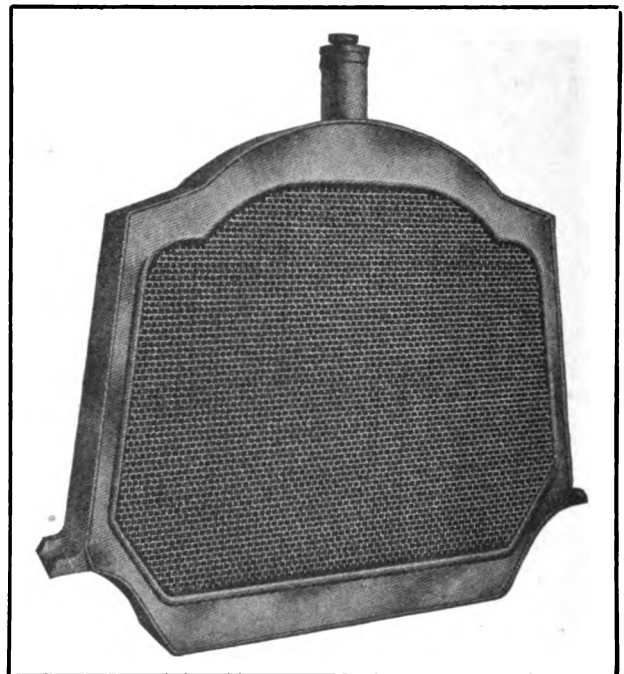
FEDDERS REAL SQUARE TUBE RADIATORS



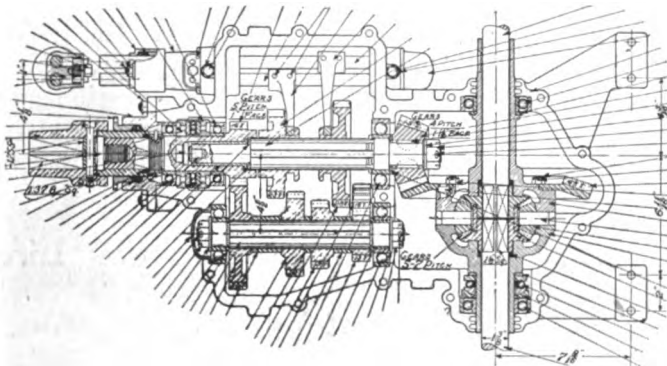
No square tube "effect" or imitation, but made of individual square tubes. Of course the real square tube is better, that's why the others imitate it in appearance. They can't make the real article at the price.

Furnished with tubes staggered or Mercedes finish, as shown on cuts.

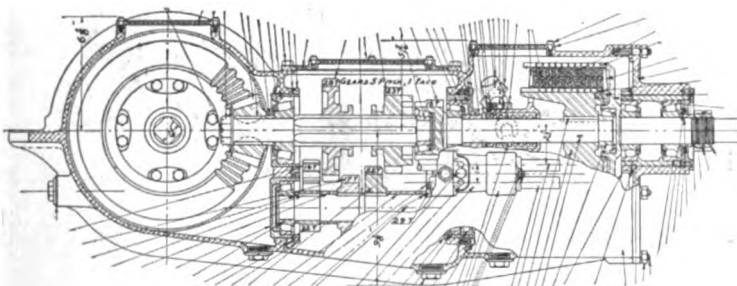
See Fedders Radiators on such cars as Packard, Thomas, Pierce, Haynes, Matheson, National, etc.



FEDDERS MANUFACTURING WORKS, Buffalo, N. Y.



MODEL 42—Light Truck Type. Transmission and Differential Unit, Adapted to Chain Drive. 3-Point Suspension.



MODEL 91—Light Truck Type. Transmission, Clutch and Differential Unit, Adapted to Chain Drive. 3-Point Suspension.

Warner Gear Company's PRODUCT

The Standard for years, with improved features and added refinements for 1911 in

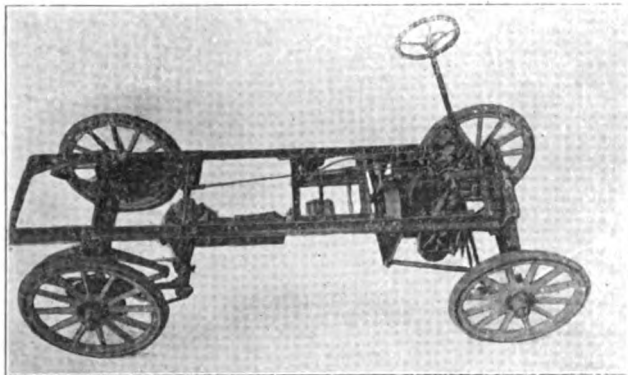
TRANSMISSIONS DIFFERENTIALS
STEERING GEARS CONTROL LEVERS
and CLUTCHES

Either Separate or Combined Units Adapted to Any Style Construction for Both Heavy and Light Service

**Commercial Vehicles
or Pleasure Cars**

Illustrated 1911 Catalog upon request.

WARNER GEAR COMPANY
Muncie, Indiana



WHERE THE MONEY GOES— Repairs

It costs from \$25 to \$50 to tear down the average truck, clean and examine its parts and re-assemble—exclusive of the actual work of repairs. It costs more to get at the defective part than it does to make it right—BECAUSE OF THE WAY THEY ARE PUT TOGETHER.

Economy trucks will save 75% of your repair bills—BECAUSE OF THE WAY THEY ARE PUT TOGETHER—Unit assembly.

Economy engines can be entirely removed or replaced in 45 minutes; transmissions in 35 minutes; radiators in 15 minutes, and jack-shafts in 20 minutes, either part without disturbing the other two and all without disturbing the body.

CONVENIENT? Nothing like it on the market.

ECONOMICAL? After all, it is not the first cost, but the repairs and up-keep that staggers the owner.

The Economy elements are the best the market affords; Davis motors, Ball transmissions, Muncie jack-shafts, Tut-hill springs, Sheldon axles, Hayes wheels, Long radiators and Foster steering gears.

Bodies to suit your requirements.

The Economy truck is not the development of an engineer's idea; it is the result of experience. It is built from the users standpoint. We've been at it four years.

Two capacities only, 1000 lbs. and 2000 lbs.

We would like to correspond with garage and repair men with the object of establishing Economy Maintenance Stations.

We do not require the purchase of a demonstrator.

ECONOMY MOTOR CAR COMPANY
Bissel and Cass Sts. JOLIET, ILL.



National WINS AGAIN!

Cleans Up Handsomely at Los Angeles in the First Races of 1911

January 22, 1911

Time Trials—One Mile.

National 60 first—Wilcox, 39 sec.—92½ miles per hour.

Five Mile Free for All. Class D.

National 60 first—Wilcox, 3:21—89½ miles per hour

Five Mile Handicap—Free for All. Class E.

National 60 first—Wilcox (scratch)—3:42½.

Fifty Miles, 600 cu. in. and under. Class E.

National 40 first (without a stop)—Wilcox—40:23½

National 40 second—Merz—40:24½.

Ten Mile Free for All. Class D.

National 60 second—Wilcox—6:54½.

(Defeated only ⅓ of second by Simplex 90.)

Five Miles, 600 cu. in. or under. Class E.

National 40 second—Merz—3:39½.

January 14, 1911

Time Trials—One Mile.

National 60 Tie for first—Wilcox—39½ seconds.

Ten Miles, 600 cu. in. or under. Class E.

National 40 first—Merz—7:23½.

National 40 third—Wilcox.

Twenty-five Miles, 600 cu. in. or under. Class E.

National 40 first—Merz—19:56½.

National 40 second—Wilcox.

Five Miles Free for All. Class D.

National 60 second—Wilcox—3:28.

National 40 third—Merz.

Ten Miles Free for All. Class D.

National 60 second—Wilcox—6:57.

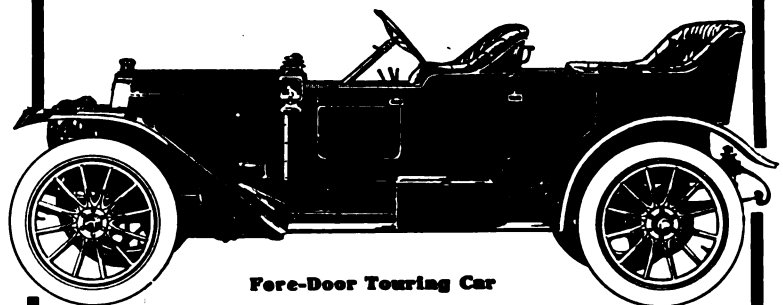
National 40 third—Merz.

Five Miles Free for All Handicap. Class E.

National 40 third—Wilcox.

Summary—2 Days Racing

National—6 firsts, 6 seconds, 4 thirds.



Fore-Door Touring Car

Numerous racing victories in all parts of the country keep National 40 before the public the year 'round. This continual publicity is of great value to every National dealer.

Open Touring Car, Open Toy Tonneau, Speedway Roadster, \$2,500

Fore-door Touring, Fore-door Toy, 2,600

Fore-door Seven-passenger Touring, 3,000

Luxurious Limousine, Fore-door, \$3,000; Open, . . . 3,750

NATIONAL MOTOR VEHICLE CO.

1007 E. 22d Street

INDIANAPOLIS, IND.

Licensed under Selden patent.

Put a Ring Around This

REGISTERED
3
IN
TRADE MARK

Every typewriter,
adding machine and office
mechanism **needs** 3-in-One.

This oil is light enough to make over-
oiling impossible. It's just heavy enough
to make every part work without a hitch
or hesitation.

3-in-One cleans, polishes, pre-
vents rust, too.

50c, 25c, and trial size (10c) bottles, all stores. Send for free sample.
3-IN-ONE OIL COMPANY 64 BROADWAY, NEW YORK

Abbott-Detroit

1911 MODELS
NOW READY

The Perfectly Standardized Car

ABBOTT MOTOR CO.
143 WATERLOO ST., DETROIT, MICH.

*Write for catalogue
and specifications.*



FORGINGS

We specialize on FORGINGS. Let us have a look at your specifications. Also see our catalog of stock forgings always on hand.

Billings & Spencer Co.,
HARTFORD, CONN.

on your new Car, specify

"Firestone" TIRES

and

DEMOUNTABLE RIMS

—and end your tire troubles
before they begin

THE FIRESTONE TIRE & RUBBER CO.

"America's Largest Exclusive Tire and Rim Makers"

Akron, Ohio

F & S

ANNULAR BALL BEARINGS

(Made in Germany)

The Dependable Kind—

J. S. BRETZ COMPANY

Sole Importers

MOTOR HALL, 250 West 54th St., NEW YORK

110,000 Pressed Steel Automobile Frames Our Output—August 1st, 1909, to August 1st, 1910.

Over 110,000 frames actually shipped during the past year is a record of which we are justly proud. Our customers include 60 per cent. of the reliable motor car makers of America, and they attest the splendid service we give and the excellent quality of our workmanship, recognizing the fact that a "SMITH" frame is a distinct mark of quality and a valuable selling point for their agents. The great capacity of our new plant (1000 frames per day) enables us to take on additional business for the coming year, and we extend to you the opportunity to enhance the value of your car by the use of a "SMITH" frame.

SEND BLUE PRINTS FOR QUOTATIONS.

FRAMES
AXLES
CLUTCHES

A. O. SMITH CO., Milwaukee, Wis.

TRANSMISSIONS
STEERING COLUMNS
STAMPINGS

Stevens-Duryea Motor Cars Built 'Round a Principle



Model "AA" Landaulet
Price \$4800.00

Apart from the general distinctive appearance, comfort, reliability and simplicity of the Stevens-Duryea, the exquisite finish in detail of body work and mechanism are other reasons which must influence you in your selection.

Let us mail you our literature.

STEVENS-DURYEA COMPANY
Chicopee Falls, Massachusetts

**Convenient —
Attractive — Necessary**

If you are a motorist you need an auto trunk—a Kamlee Auto Trunk. Because the Kamlee is the only one that is built to meet all the demands of the motorist, and the only one that does—it is made by trunk-makers who are motorists, touring motorists, who know what motorists want.

**The
KAMLEE
Auto Trunk**

is built of 3-ply Bass Wood Veneer (not of pulp composition); covered with heavy black enameled duck; lined with genuine Irish linen; fitted with two or three or more suit cases which can be obtained by merely lowering the patent drop front of the trunk, a feature not found in any other trunk made; is

Absolutely Rainproof and Dustproof

and is without question the strongest and most durable, neatest and most attractive and is an addition to the appearance of any car; it is built to conform to the shape of the tonneau of any make or type of car. If you want more information about the only real auto trunk address,

THE KAMLEE COMPANY
345 Milwaukee Street
MILWAUKEE,
WIS.

SIMMS MAGNETOS

**The Simms Motor Starter
Starts the Motor Without
Cranking.**

START your motor without cranking; avoid broken arms by "back-firing"; save gasoline and wear-and-tear of the whole car, and increase the pleasure of motoring generally.

THIS Starter is used in connection with the standard Simms Magneto. It is not a complicated system of dual ignition, as no high tension wiring, high tension switch or separate coil is used.

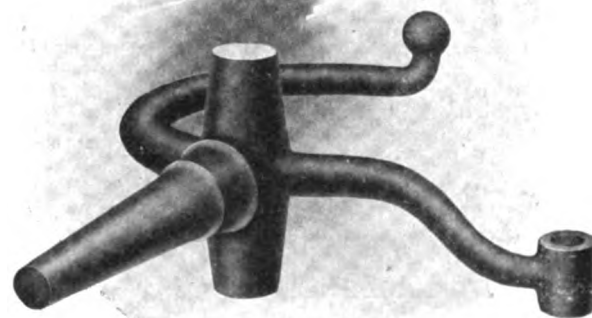
Write for Illustrated Booklet L. TODAY.



THE SIMMS MAGNETO CO.
1780 BROADWAY NEW YORK CITY

London Representative:
Simms Magneto Co., Ltd.

Paris Representative:
Cle des Magnetos Simms



ONE OF THE PIECES WE MAKE

Automobile Drop Forgings OF EVERY DESCRIPTION

Chrome Nickel and Nickel Steel Work a Specialty

BLUE PRINTS SOLICITED.
PROMPT DELIVERIES.

The Consolidated Mfg. Co. 1735 Fernwood Ave.
TOLEDO, OHIO

We also make YALE MOTORCYCLES, YALE and SNELL BICYCLES, CONSOLIDATED PACKAGE CARS and HUSSEY HANDLE BARS.

Empire Tires

WEAR LONGEST

EMPIRE TIRE CO., Trenton, N.J.

Regal 30

"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

\$1250

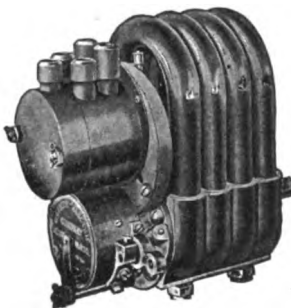
Runabout, Baby Tonneau, Touring Car, Coupe

Greatest Automobile Value in America

WRITE FOR OUR LITERATURE

REGAL MOTOR CAR COMPANY, Detroit, Mich.

Heinze High Tension Magneto



Construction—Mechanically unequalled.

Durability—Greater than the life of the car.

Efficiency—Proven by the users.

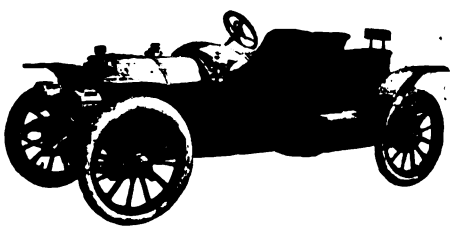
Catalogue H with full information is yours for the asking.

HEINZE ELECTRIC COMPANY
Lowell, Massachusetts

MERCER

TOURING CAR
TOY TONNEAU
SPEEDSTER

Each \$2150



Style, Luxury, Quality, Strength, Speed.

Made Right and Stays Right

Let us hear from you.

MERCER AUTOMOBILE CO., Box 126, Trenton, N. J.

Woodworth



WOODWORTH TREADS are the only true tire protectors. They never chafe or heat the tires. They are held in place by coil springs along the sides, which automatically take up all slack and prevent any looseness. The protector is always tight and smooth.

No other protector can be fitted in the way that these automatically fit themselves.

They fit all makes of tires—anyone can easily put them on. *Send for Catalogue.*

Leather Tire Goods Co., Niagara Falls, N. Y.
Canadian trade supplied from Niagara Falls, Ont.

"Gramm"

THE STRONG POINTS—

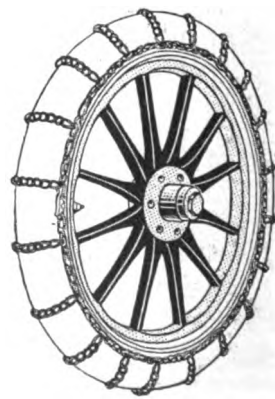
Three Point Suspension.
Gramm Multiple Disk Clutch.
Gramm Roller Spring Suspension.

The Gramm Motor Car Co.

101 So. Lima St. LIMA, OHIO

New York Headquarters—CROSS-MAGILL MOTOR TRUCK CO.,
30 Church St., New York

Weed Chains



Wintry weather — muddy roads, slippery pavement. Every car will skid unless you attach **WEED CHAINS**. They positively prevent skidding.

WEED CHAIN DEPARTMENT
United Manufacturers
250 West 54th St. New York



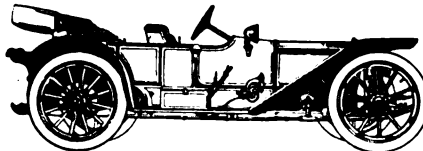
1911 CATALOGUE READY

CORBIN MOTOR VEHICLE CORPORATION
New Britain, Conn., U. S. A.
Licensed under Selden patent.

THE AMERICAN

"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading cities. Increased output this year offers a new opportunity to buyer and dealer alike.



SEMI-TORPEDO TRAVELER

Underlung
frame; 40 in.
wheels; 4 cyl.; 50
H. P., \$4250.

AMERICAN MOTOR CAR CO., Dept. Y, Indianapolis, Ind.
Licensed under Selden patent.



"The car with the invisible start."

96 in. wheel base
32 in. wheels

22½ H. P. \$800

Sliding gear transmission. Multiple disc clutch. Weight,
1200 lbs.

Runabout \$800.
Roadster \$825.
Surrey \$850.

Write for Catalog
K-R-I-T Motor
Car Company
DETROIT



\$1,600 Cartercar

Model "L," 4 cylinder, 30-35
H.P., 110 inch wheel base, 5 pas-
senger, Friction Transmission.
Chain-in-Oil Drive, any number of
speeds, will climb a 50% grade with
load, including magneto, gas lamps,
generator, horn, mats, tools, jack,
etc. \$1,600.

Model "H," 4 cylinder, 25 H.P.,
100 inch wheel base, Runabout
\$1,100. Double Rumble \$1,125
Double Divided Rear Seat \$1,150.
Miniature Tonneau \$1,150.

Write for 1910 catalog.

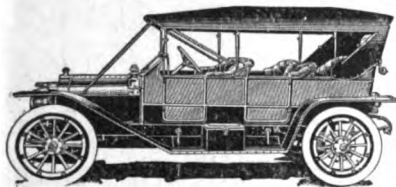
CARTERCAR CO.

Pontiac, Mich.

Licensed Under Selden Patent.



WRITE FOR INFORMATION ABOUT
THE S E L D E N CAR FOR 1911
MADE BY THE FATHER OF THEM ALL



The Selden Car stands for
every desirable development
in the automobile—from the
powerful perfectly construct-
ed engine to the evenly bal-
anced quality parts that go
to make the finished car.

A wide range of body
styles and prices. Roadster,
touring and torpedo bodies.
New four and six passenger
torpedo bodies with fore-
doors.

With complete touring equipment, from \$2250 to \$2600

Good territory still open for live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.
GEO. B. SELDEN, Pres.

Licensed under Selden patent

STAVEL-CHICAGO

We have a dealers' proposition for
1911 decidedly different, because it was
planned from the dealers' standpoint. It
means a great car with a 100% perfect sell-
ing plan and a price proposition in a class by itself.

30, 35 and 40 h. p. cars—\$1450 to \$2000. Deal-
ers everywhere are investigating. How about you?

STAVEL CARRIAGE COMPANY

Dept. 9012 76th and Wallace Sts., CHICAGO



GUARANTEED FOR LIFE

The most economical car in the world

Runabout \$750 Touring Car \$900
Torpedo Runabout . . \$850 Coupe \$1100

HUPP MOTOR CAR COMPANY

Dept. K

DETROIT, MICH.

Licensed under Selden patent.



Unit Power Plants

Keep Oil In and Dirt Out

Model 51—\$2200

Model 41— 1700

Model 38— 1650

Model 35— 1250

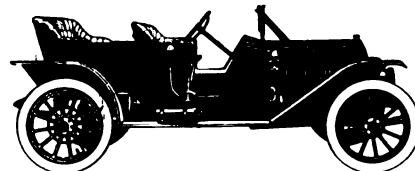
Model 30— 1250

Model 25— 1100

All touring models fitted with
removable front doors and
panels at a slight extra charge.

Jackson
Automobile Co.
Jackson, Mich.

Licensed under Selden Patent



Packard
CABLE

Is Absolutely Sure

Don't take chances on the wiring of your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

Just put on Packard Cable and forget all about your ignition troubles

NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY

Send for samples and prices before ordering elsewhere

THE PACKARD ELECTRIC CO., 4328 Dana Ave., Warren, O.



METZ AIR CAR—BLERIOT TYPE.

EVERYBODY MAY FLY

Aeroplanes complete or in the knock-down. Motors 30, 60 and 120 H. P.; propellers and all component parts.

Manufacturers of Metz Runabouts—lightest and most economical automobile in the world.

We want live progressive dealers everywhere.

METZ COMPANY, Waltham, Mass.

SERVICE and SATISFACTION

are assured when

G & J TIRES

are used.

G & J TIRE CO., Indianapolis, Ind.

We Sell Continental Demountable Rims.

30,000 MILES WITHOUT ADJUSTMENT.

THESE PARSONS WHITE BRASS BEARINGS RAN THAT DISTANCE IN A PACKARD CAR. THEY ARE BACK IN THE CAR WITHOUT EVEN BEING SCRAPED

STILL RUNNING RUNNING STILL.



Cramp — Metals

THE W. CRAMP & SONS SHIP & ENGINE BUILDING CO. PHILADELPHIA, PENNA.

PRESSED STEEL

Automobile Frames

Running Boards

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THE PARISH & BINGHAM CO., Cleveland, Ohio

Driver Geo. Clark Added More

victories in the Dallas, Texas, meet to the long string, which he has annexed this summer in a Cutting 40 equipped with a

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"Best in the World"

REMY ELECTRIC COMPANY

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HENRY "40"

Perfect Road Score in 1000 Mile Reliability Contest

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YOU WILL LIKE OUR MODEL "K" AT \$900

Henry Motor Car Sales Co., 1507 Michigan Boulevard Chicago, Illinois

The **Paige-Detroit** 1911

4 Cycle—4 Cylinder Full 25 H. P. Motor **\$800**

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THE PAIGE-DETROIT MOTOR CAR CO.

245-255 Twenty-First Street Detroit, Mich.

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Manufacturers of

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The Raymond and Duplex Brake

436 Housatonic Ave., BRIDGEPORT, CONN.

You can buy

Rebuilt Thomas Flyers
and other makes practically as good as new which are cheaper and better than some new cars. Prices range from \$750 up. Second-hand small cars taken in exchange.

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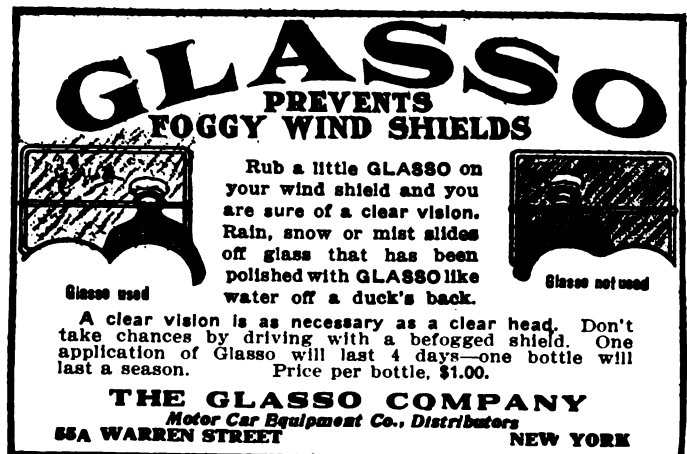
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from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?

Van Wagner makes that kind.

Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. **WRITE US.**

E. B. Van Wagner Mfg. Co., 706 Union Bldg. SYRACUSE, N. Y.



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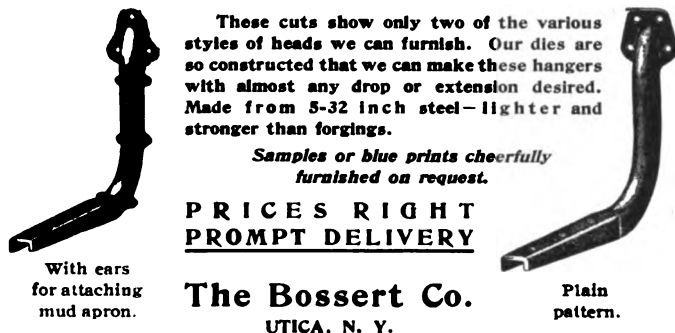
Rub a little GLASSO on your wind shield and you are sure of a clear vision. Rain, snow or mist slides off glass that has been polished with GLASSO like water off a duck's back.

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A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasso will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

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THE GLASSO COMPANY
Motor Car Equipment Co., Distributors
55A WARREN STREET NEW YORK

Pressed Steel Step Hangers



These cuts show only two of the various styles of heads we can furnish. Our dies are so constructed that we can make these hangers with almost any drop or extension desired. Made from 5-32 inch steel—lighter and stronger than forgings.

Samples or blue prints cheerfully furnished on request.

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The Bossert Co.
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With ears for attaching mud apron.

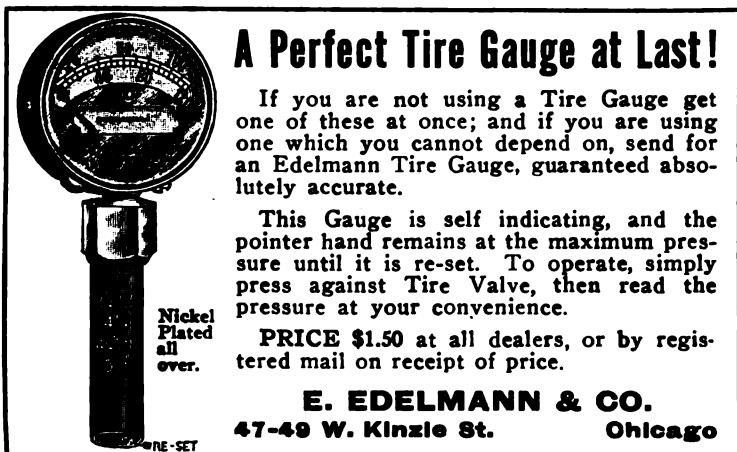
Plain pattern.



DIAMOND CHAINS

are and have been the recognized quality standard for 20 years. Strong, accurate and durable. Let us cut your sprockets.

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150 W. Georgia St. Indianapolis, Ind.
Capacity 8,000,000 feet per year.



A Perfect Tire Gauge at Last!

If you are not using a Tire Gauge get one of these at once; and if you are using one which you cannot depend on, send for an Edelmann Tire Gauge, guaranteed absolutely accurate.

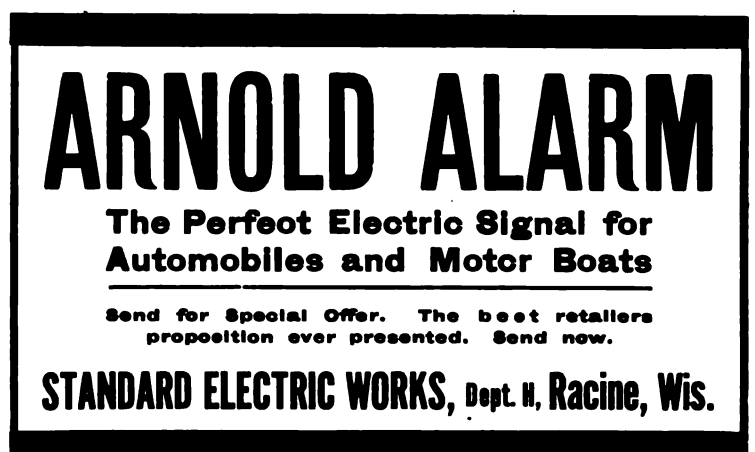
This Gauge is self indicating, and the pointer hand remains at the maximum pressure until it is re-set. To operate, simply press against Tire Valve, then read the pressure at your convenience.

PRICE \$1.50 at all dealers, or by registered mail on receipt of price.

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47-49 W. Kinzie St. Chicago

Nickel Plated all over.

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ARNOLD ALARM

The Perfect Electric Signal for Automobiles and Motor Boats

Send for Special Offer. The best retailers proposition ever presented. Send now.

STANDARD ELECTRIC WORKS, Dept. H, Racine, Wis.

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FULL INFORMATION UPON APPLICATION

WE make vehicles for any kind of business, guarantee efficient service and as one of the oldest makers of commercial power-wagons our product is a known and fixed quantity. We can interest any merchant interested in effecting a business economy.

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Write today for copy
1911 Catalog. Missing
means losing.

Ford Motor Company DETROIT, MICH.

MAXWELL CARS

1911 Line

Model E. A. Touring Car, 4-cylinder,	30 h. p.,	price,	\$1350
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Model I Touring Car, 4 " "	25 " "		950
Model Q-11 Runabout, 4 " "	22 " "		750
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Maxwell-Briscoe Motor Co.

Licensed under Selden patent.

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THE 1911 OWEN

The 1911 OWEN BERLIN represents the highest development of closed car construction. It is the embodiment of comfort with exclusive features affording greater convenience than can be enjoyed in other cars. The easy running qualities of the OWEN BERLIN are unequaled because of large wheels, OWEN spring suspension and minimum vibration from the long stroke motor. Combining these features with interior appointments of the most luxurious character, the OWEN BERLIN (seating six) is a car certain to please the most exacting.

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The H. F. M. Oil Filtering

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LUBRICATING SYSTEM

Is the first radical and distinct improvement in automobile lubrication since the industry began.

AUTOMATIC OIL FILTER

SELF-CLEANING ORANK-OASE

Provide Clean, Cool Oil All the Time.

Write for convincing proofs.

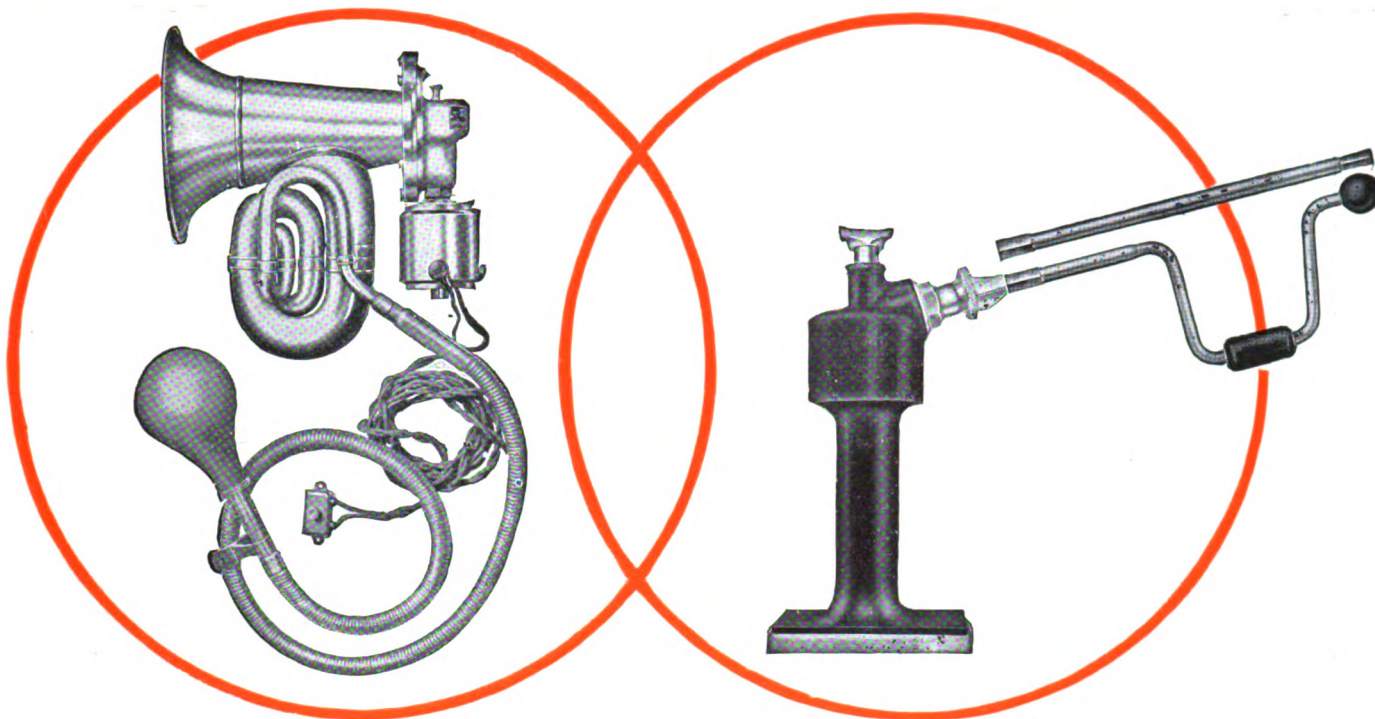
THE AL-TON MOTOR ACCESSORY CO.
E. South Street Akron, Ohio

6 Cylinder Cars
50 and 60 H. P.
\$2650 to \$3250

KLINE CAR

4 Cylinder Cars
24 to 40 H. P.
\$1500 to \$2250

See Our Exhibit at the Chicago Show | B C K MOTOR CAR COMPANY
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TWO UNIQUE KLAXON PRODUCTS

Both are made by the makers of the famous KLAXON—from the highest quality of materials obtainable. Both represent characteristic KLAXON perfection of detail and workmanship—durability, reliability, distinction.

THE COMBINATION KLAXON combines the Klaxon with a reed horn of exceptional quality and thus provides in one instrument long and short range signals which will meet all requirements, under all conditions.

Admittedly the best warning device that can be made.

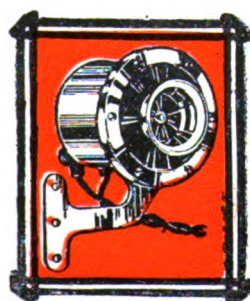
Price Fifty Dollars.

THE RAISWELL is as different from ordinary "jacks" as the Klaxon is unique among ordinary "horns." It represents not only everlasting durability, but obviates all the annoyance and disagreeable features heretofore experienced in putting a lifting device in place and in operating it.

Placed by means of the extension handle—a few easy turns—and the car is raised.

Price Ten Dollars.

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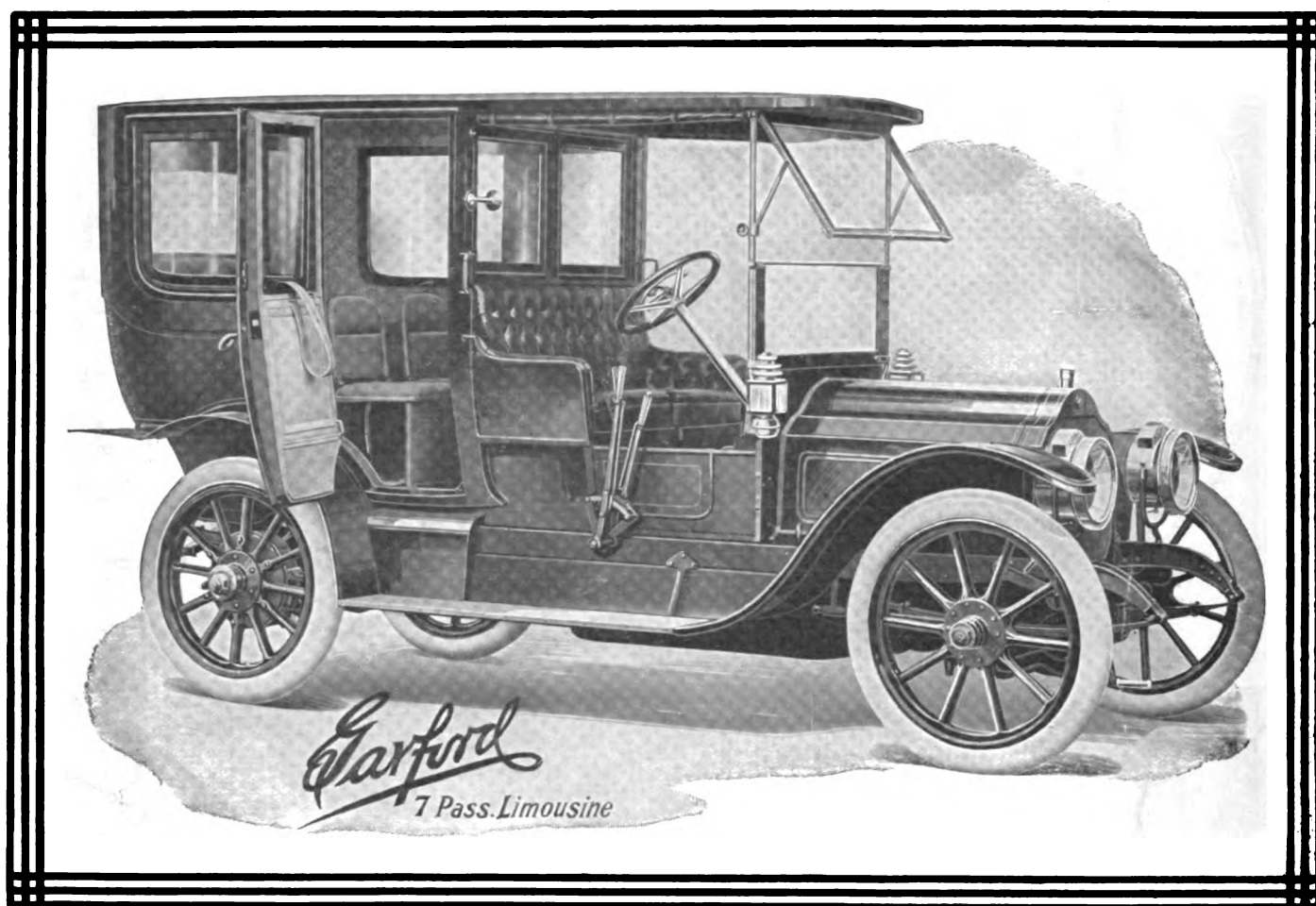


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KLAXON

"The Public Safety Signal"





THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

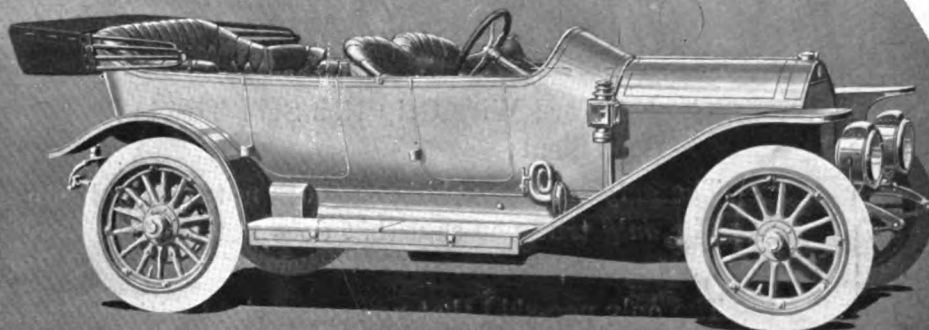
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"Stoddard-Dayton"

NONE can go further—none faster—
none ride with greater ease and com-
fort—none have ever given better service.

The Dayton Motor Car Co
Dayton, Ohio

HARTFORD

Wire Grip Non-Skid Tires

(Midgley Tread)

The Tire That Has
Solved The Problem Tire
Makers Have Been Working
On For Years.

The Hartford Wire Grip Non-Skid Tire is the *only* true non-skid that is resilient;

The *only* true non-skid that does not rack and ruin the car;

The *only* true non-skid that does not mar the easy riding qualities of the car;

The only non-skid that you carry right with you in the tread of the tire itself;

In other words, it is a *pneumatic* tire, and a non-skid tire combined;

Insure your car, its passengers and the public by putting them on your car *now*.

This tire is made in standard sizes, Dunlop, Hartford, Quick Detachable Clincher and Clincher; also in millimeter sizes.

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Franklin Commercial Cars



Another Triumph for Air Cooling

A pneumatic-tired, air-cooled Franklin truck won the Journal truck economy run in Portland, Ore., on January 21 and defeated a whole string of water coolers. The victory only adds to the proof, if proof is necessary, that air cooling and pneumatic tires are the right combination for the commercial motor car.

The Portland Journal economy run was over ninety miles of muddy roads with grades as steep as eighteen per cent. The Franklin won out easily.

The truck that won the contest had been in service for five months, and was equipped with the tires originally put on at the factory. They had never even been punctured, which is evidence of the practical service obtainable from pneumatic tires on Franklin trucks.

Simplicity and absolute dependability make Franklin air cooling the only safe method for motor trucks. The motor will

not overheat; there is nothing about the cooling system to break down.

A truck, to be economical, must keep steadily at work with a minimum of interruptions for repairs.

The great advantage of the pneumatic-tired, air-cooled Franklin is its high speed ability. It can go fast absolutely without destructive jar. The pneumatic tires absorb road shocks.

It can do fifty per cent more work in a day than solid-tired trucks of the same capacity because it can move faster and make more trips.

Comparison of the cost of upkeep and operation of the Franklin truck with that of any other form of delivery shows that the Franklin pays for itself in what it saves and does.

Send for Commercial Car Catalogue

H H FRANKLIN MANUFACTURING COMPANY Syracuse N Y
Member A. L. A. M.

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y
SOLE DISTRIBUTOR

INTUITIVELY

(ALMOST)

Manufacturers and dealers knew that the new 1911 Stewart Speedometer would make other speed indicators antiquated. This new instrument is in a class by itself, far and away ahead of any speedometer heretofore made, making friends everywhere by making good.

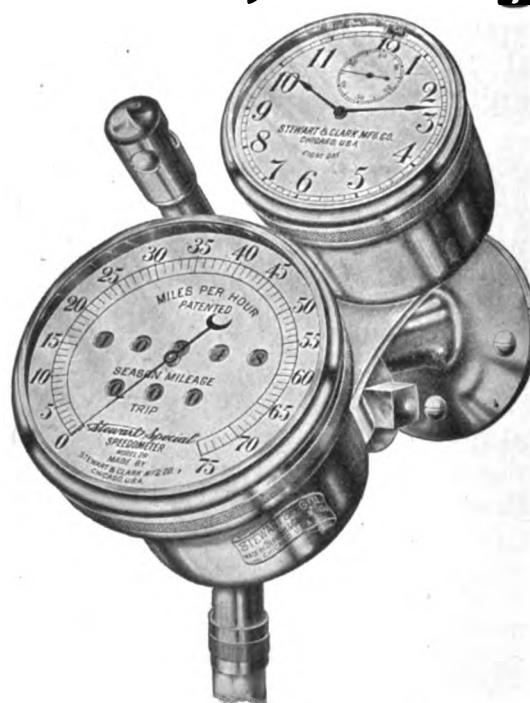
Anyone will tell you the Stewart is the leading Speedometer.

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Stewart & Clark Manufacturing Company

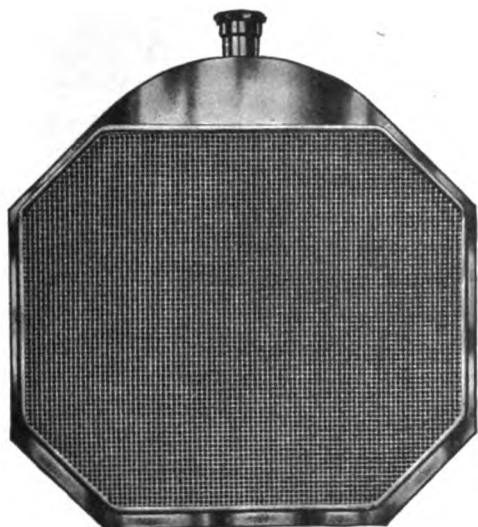
1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
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Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years

San Francisco: 307 Golden Gate Avenue
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The Mayo—the radiator thoroughbred

¶ Mayo Radiators stand for all that is best in high-grade construction, are sold on their merits and make no attempt to compete on the score of price.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT



"Arc Flame System" MAGNETO

Accurate and durable. Every part made of the finest kind of material, fashioned by skilful craftsmen and assembled under the most rigid inspection. Reliable and efficient in service.

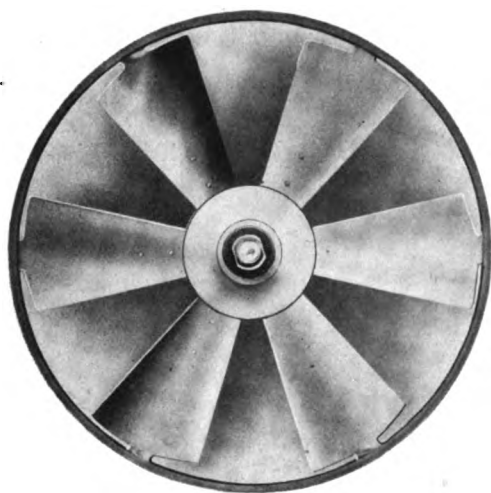
High tension, with stationary, removable coil. No moving wire on the armature. Each spark is followed by an arc flame. This arc flame will ignite a much weaker mixture than with the spark produced by the usual coil ignition. A variation of 45 degrees is allowed on the magneto shaft, which means 45 degrees in the crank shaft for a four cylinder, four cycle motor, as the magneto runs at crank shaft speed. The retarded spark is just as efficient as the advanced spark, making it easy to start the motor with a quarter turn of the crank, with the timing lever fully retarded.

Get the catalog of the "Pittsfield Ignition System"

PITTSFIELD SPARK COIL COMPANY, Dalton, Mass.

SALES REPRESENTATIVES—NEW ENGLAND, W. J. Connell, 36 Columbus Ave., Boston. ATLANTIC STATES, Thomas J. Wetzel, 17 W. 42d St., New York. CENTRAL STATES, K. Franklin Peterson, H. V. Greenwood, 166 Lake St., Chicago. MICHIGAN, L. D. Bolton, 319 Hammond Building, Detroit. PACIFIC COAST, The Laugour Co., San Francisco.

THE **McCORD** BALL BEARING AUTOMOBILE **FAN**



Unquestionably the

**MOST EFFICIENT
MOST DURABLE
MOST SATISFACTORY
MOST POPULAR**

Fan Produced.

There is a Reason

One piece reinforced or individual blades — steel or aluminum — designed and built entirely in our own factory, resulting in —

**The highest grade of construction at the lowest price.
Fans in quantities and when you want them.**

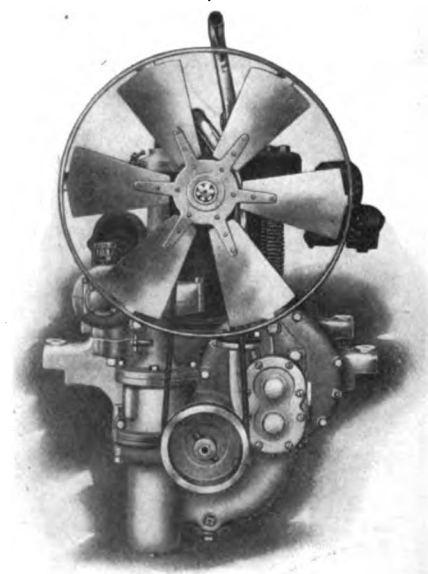
YOU will see them
on the up-to-date
motors — are they on
yours?

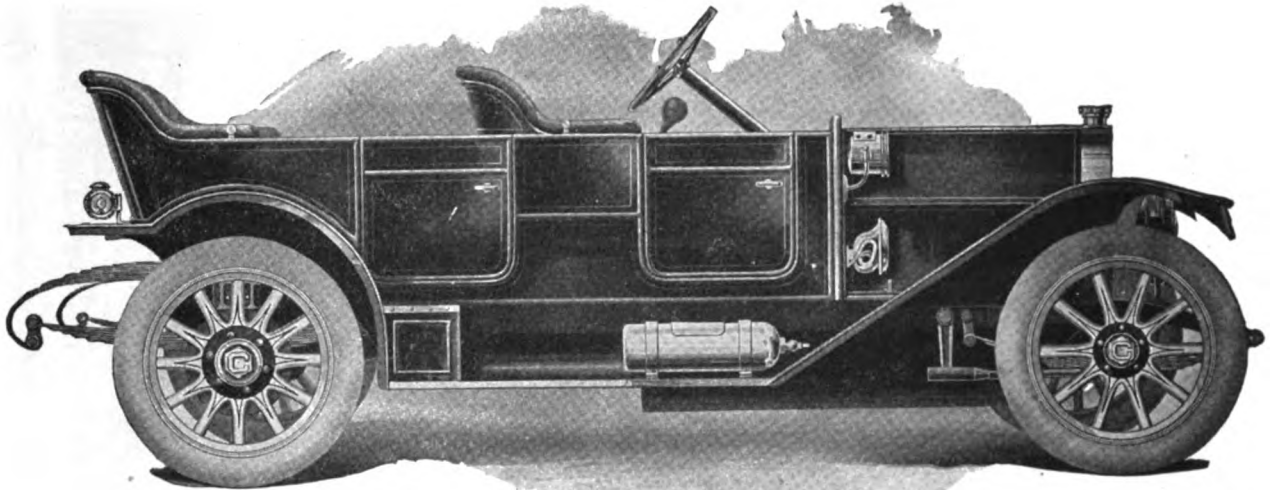
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THE CHICAGO SHOW**

**McCord
Manufacturing Company
DETROIT**

CHICAGO

NEW YORK





Model H 5 Passenger Fore Door Touring Car—\$1750

COLBY

Built to Compete with \$3000 Cars

We wish to extend our thanks to the experts and others who have been so pronounced in proclaiming the Colby "40" the best motor car ever put on the market selling for less than \$2500.

It easily develops 5 to 50 miles an hour without overworking the motor, or causing any unpleasant vibration of the car.

The Colby is designed for comfort, as well as appearance, having the grace and beauty only found in high priced cars.

In our construction, we have used only the very best workmanship and material throughout. A glance at our specifications will prove it. Compare them with cars selling for three thousand and more.

We would be pleased to have the most skeptical call at our exhibit and be convinced.

SPECIFICATIONS

Body: Standard touring straight line.
Seating capacity, five. Fore-doors.
Motor: Four Cylinder—H. P. 35-40.
Bore, $4\frac{1}{4}$; stroke, $5\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.
Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.
Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

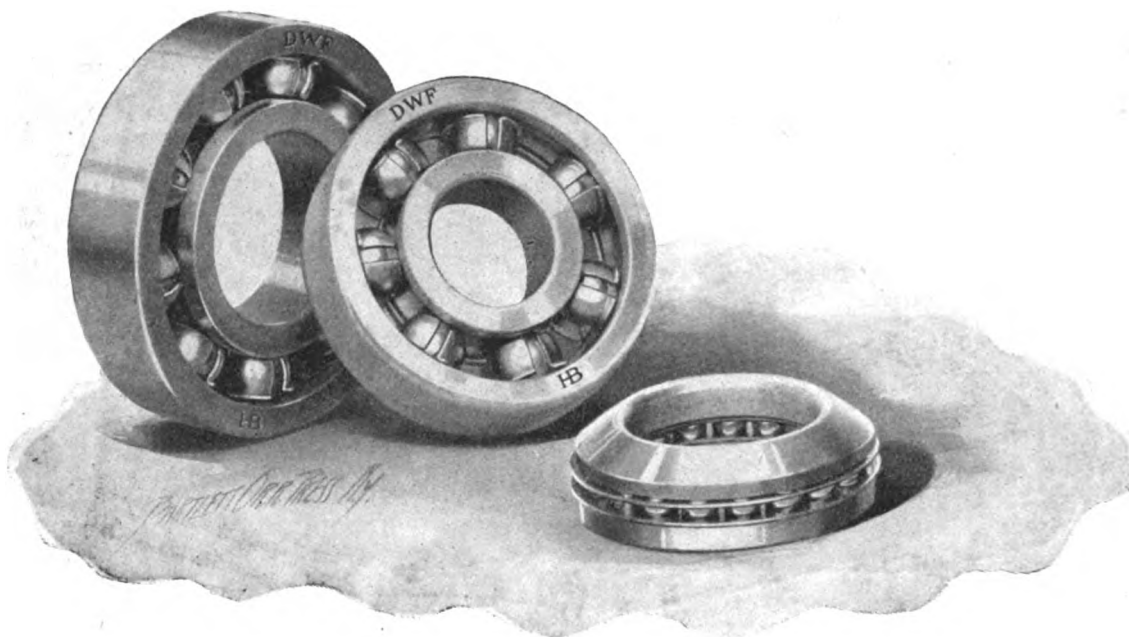
Ignition: Jump spark dual system.
Carburation: Carburetor—special fuel feed—gravity.
Clutch: Type—multiple disc. Friction surfaces—steel to steel.
Gearset: Selective—located amidship. Three speeds forward.
Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.
Bearings: Crankshaft—three large, Plain. Camshaft—three, plain. Clutch

—spindle, plain. Clutch, thrust, ball.
Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball.
Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white bronze.
Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36 x 4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type.

Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.
Demountable Rims:
Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.
Control: Hand levers on steering wheel and foot accelerator.
Price: \$1,750, f. o. b. Mason City.

COLBY MOTOR CAR COMPANY, Mason City, Iowa

New York Representative—EMPIRE CITY AUTOMOBILE CO., 1800 Broadway.



Replace With HESS-BRIGHTS

When the bearings in a car give out sooner than they should, replace them with HESS-BRIGHTS.

The pioneers among modern annular ball bearings, HESS-BRIGHTS have given dimension standards to many others, superficially similar but not always embodying the degree of accuracy or the quality of materials that have made HESS-BRIGHTS famous for their endurance.

Occasionally, when a car is dismantled, bearings supposed to be HESS-BRIGHTS may prove to be of some other and cheaper make.

In most cases the unsatisfactory bearings can be replaced with genuine HESS-BRIGHTS, dimensions being the same. The user then has the satisfaction of knowing that he has secured the maximum of durability for that size of bearing.

Inquire of the nearest local distributor, giving the number and trade mark initials of the bearing to be replaced. The correct HESS-BRIGHT bearing will be promptly sent.

LOCAL DISTRIBUTORS FOR RETAIL TRADE ONLY
New York, N. Y., The Hess-Bright Company, 1974 Broadway
Chicago, Ill., The Hess-Bright Company, 1800 Michigan Ave.

The more frequently used bearing sizes are also carried in stock by
THE POST & LESTER CO.
Boston, Mass., and Hartford, Conn.
CHANDLER & LYON MOTOR SUPPLY CO.
San Francisco, Los Angeles and Fresno, California; Seattle and Spokane, Washington



THE HESS-BRIGHT

MANUFACTURING CO.

2109 Fairmount Avenue
PHILADELPHIA, PA.

The Basis of Tire Value is Ton Miles

**SUCCESSFUL OPERATION OF COMMERCIAL
MOTOR CARS LIES IN ECONOMICAL UPKEEP**

Diamond

Wire Mesh Base—

Solid Rubber Clincher and Side Wire Types

TIRES

Mean Just This

Spliceless construction, time-tested, exclusive and Diamond Quality in every type. Backed by years of successful performance and scientific development.

**WE GUARANTEE SATISFACTION
AND OUR NAME IS ON EVERY TIRE**

It is the Strongest Guarantee Possible

SERVICE STATIONS we are now opening in upward of 50 cities—Brooklyn, Albany, Newark, Rochester, Syracuse, etc.—will give the commercial car dealer and user most valuable facilities. No waiting for stock. No delayed claims.

THE DIAMOND RUBBER COMPANY, Akron, Ohio

And All Principal Cities

The Largest Automobile



THE CELEBRATED Brampton Chain

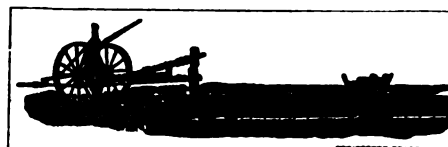
is the Strongest Chain in the World

Price the Same as Other Chains

THE Brampton Chain

is not only used on Motor Cars, Motorcycles, Bicycles and Aeroplanes, but also on Machinery of all kinds.

**All Standard Sizes
in Stock.**



THREE MEN AND FOUR HORSES COMPLETE 100 RODS OF DITCH PER DAY

ALL SURVEYING PLOTS WHERE WE DO THE TILING. A 2 P.C. INVESTMENT IN TILE PAYS 100 P.C. BY ACTUAL TEST

H. M. FISK,

Manager of the Dept. of Pub. Wks.

Solicitor and Contractor
For Tile Draining.

Maint'rs. of The Only Successful Road Tile Laying Machine on

PELLA, IOWA. Dec. 10/10/191

Chas. E. Miller, 121 Chambers Street N. Y.

Dear Sir,

I have your letter of 20th inst., stating you had shipped 3 1/2 pitch, Brampton Roller Chain. You ask what we use said chain for. I send you two Photos of Machine upon which we use said chain. Drum 22 inches diameter, Sprocket 39 inch diameter, draft 57 tons, at highest tension, the chain has run three summers without perceptible wear, and we think it a dandy.

Yours very truly,

H. M. Fisk.

We are the Sole American Agents. Catalog on request.

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Philadelphia, Pa.

Boston, Mass.

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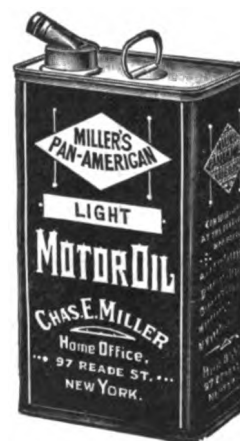
Saves Power

Saves Wear



Saves Time

Saves Money



Miller's Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Miller Pan-American Gear Case Compound

Made in Three Densities — Light, Medium, Heavy

All have a low cold test and high melting points and retain their various consistencies at varying temperatures.

In order to convince you of the efficiency of these lubricants we are willing to make you a SPECIAL PRICE for an initial order, much lower than usually quoted on other high-grade oils and greases.

AGENTS WANTED IN UNOCCUPIED TERRITORY.

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97-103 Reade Street
and 121 Chambers Street

New York City

Detroit, Mich.

Buffalo, N. Y.

Atlanta, Ga.

New Orleans, La.

54th St. and Eighth Ave., New York City.

Marion

"Thirty"

30 Horsepower
110-inch Wheel Base

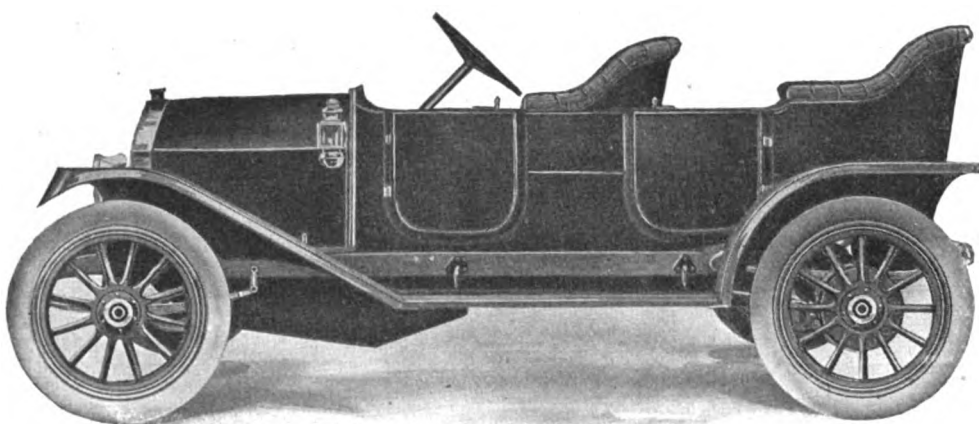
Roadster Style,
\$1,000

Torpedo Roadster,
\$1,050

5-Passenger
Touring, \$1,150

5-Passenger
Fore Doors, \$1,200

Headlights and
Magneto Included



With 30 Horsepower—110-inch Wheel Base—\$1,200.

Marion

"Forty"

40 Horsepower
115-inch Wheel Base

Roadster Style, \$1,600
Torpedo Roadster,
\$1,650

4-Passenger Close-
Coupled, \$1,600

5-Passenger
Touring, \$1,650

4-Passenger Coupe,
With Extra Body,
\$2,000

Limousine, \$2,500
Headlights and Bosch
Magneto Included

See the Thousand-Man Car

You will find no other car in the city so interesting as the Marion for 1911.

For these new Marion models which are now on exhibit show all the best ideas of a thousand designers. You can see all the greatest features which this industry has developed in this one composite car.

It is the product of a thousand brains.

All the Best Ideas

Eight years ago we started out to combine in one car all the best ideas that developed.

We had our own designers, our own engineers. Six of the ablest in America have worked on Marion cars. And they invented some features which no other man has excelled.

But their main duty has been to put other men's ideas to a test. They have watched every improvement, every bettered material, every new device. They have compared one with another—in road tests and contests—until they absolutely knew which was best.

These men have smothered their own pride of invention. When any man anywhere devised anything better they bought or adopted that man's idea.

The one idea has always been to have

every feature in the Marion car the very best of its kind in existence.

For eight years we have worked with that one idea. Each important feature has been compared with others over thousands of miles of road. Each has been tested in many national contests. And thousands of Marion owners have helped us make the comparisons.

It is very interesting to see the final result in the Marions for 1911.

The Men Who Helped

We gladly give public credit to the men who have helped us most.

The motor in our "Forty" is the latest Continental creation. The engine in our "Thirty" is made for us by one of our largest competitors. They ask us not to state the name.

These engines—in more than fifty thousand famous cars—have proved themselves the best engines made. No other engines have done so much to build up great reputations.

We use the Kinsey pressed steel frames, the Warner differential, the Warner steering gear. We use the Stutz transmission, the Timken bearings, the Splitdorf and Bosch magnetos. And we use the Sheldon springs—the costliest springs made in America.

These things we buy because we have proved them better than anything we can make. We make in our own shops only such parts as we can make better than others.

Cutting the Cost

Every Marion feature—whether we make it or buy it—has been adopted without regard to cost. If we knew anything better at double the price we would get it.

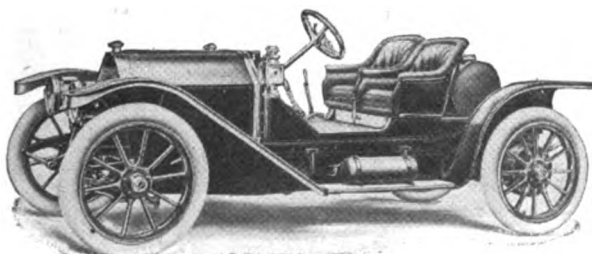
But other men have worked equally well to cut selling cost and overhead expense. We believe there is no other car where so much of the price goes into the making cost.

The 30-horsepower Marions, as a result, sell for \$1,000 to \$1,200. The wheel base is 110 inches. The price includes headlights and magneto.

The Marion "Forty," with 115-inch wheel base, sells for \$1,600 and \$1,650. Compare that with other 40-horsepower cars. The car nearest this "Forty" in style and features is selling for \$2,850.

Come and see these Thousand-Man cars. Let us explain why each device was adopted—how we proved it better than others. If you cannot come, please write for our catalog, showing all the new Marion models.

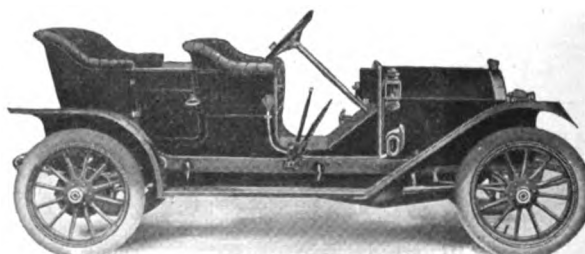
THE MARION SALES COMPANY, Indianapolis, Ind.



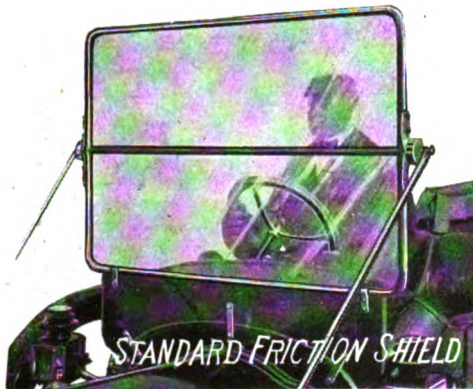
With 30 Horsepower—110-inch Wheel Base—\$1,000
With 40 Horsepower—115-inch Wheel Base—\$1,600

Marion

Licensed
Under
Selden
Patent

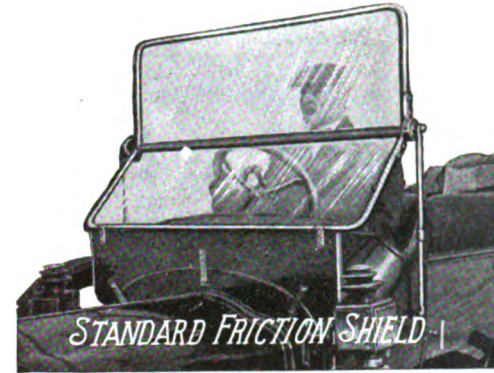


With 30 Horsepower—110-inch Wheel Base—\$1,150
With 40 Horsepower—115-inch Wheel Base—\$1,650

**VERTICAL**

Glass	36 inch	41 inch	44 inch
French Plate	\$25.00	\$27.50	\$30.00
French Coach	22.50	25.00	27.50

1911

**ZIG - ZAG**

Glass	36 inch	41 inch	44 inch
French Plate	\$27.50	\$30.00	\$32.50
French Coach	25.00	27.50	30.00

The STANDARD Friction Wind Shields

Correct Styles for Runabouts, Roadsters and Touring Cars

DESIGNED BY AUTOMOBILE ENGINEERS (Not an Experiment)

No Rattling

No Flopping

The Shield with the Positive Lock

Will Last as Long as Your Car

SPECIFICATIONS

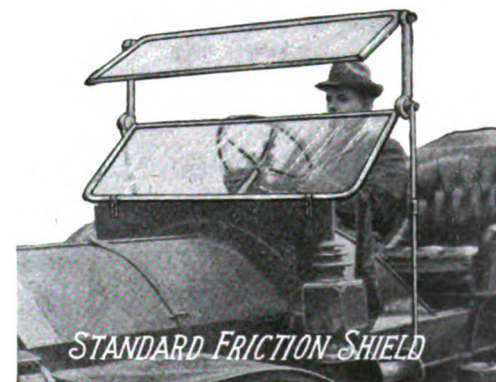
HINGE—Friction supplemented by pawls which lock the shield in four positions. The tension of the pawls and friction is independent. While the pawls are sufficient to hold the top half of the shield in position, by tightening the friction surfaces the tension can be regulated to suit individual requirements. The pawls and ratchets are case-hardened steel. The cupped spring washers maintain an equal pressure on the fibre friction washers, thus insuring uniform and smooth action of the hinge. The interior of the hinge is thoroughly lubricated, and as the hinge is absolutely air-tight, evaporation of the lubricant is prevented and wear is practically eliminated.

FRAME—18 Gauge brass tubing. Glass, 3-16 in. imported French Plate or French Coach.

FITTINGS—Either African mahogany or Circassian walnut filling-in board; telescopic stay rods; brackets for attaching filling-in board to dash and Wind Shield to filling-in board; swivel bases for attaching stay rods to frame.

**RAIN - VISION
(VERTICAL)**

Glass	36 inch	41 inch	44 inch
French Plate	\$32.50	\$35.00	\$37.50
French Coach	30.00	32.50	35.00

**RAIN - VISION
(ZIG-ZAG)**

Glass	36 inch	41 inch	44 inch
French Plate	\$35.00	\$37.50	\$40.00
French Coach	32.50	35.00	37.50

Any Type Shield in Clear Vision
[French Plate Glass Only] \$2.50 extra

THE EAGLE COMPANY, Manufacturer, Automobile Department, 98 Warren Street, Newark, N. J.

B O S C H

Equipped Cars

Supreme During 1910



Among Important 1910 Victories of Cars Equipped with Bosch Magnetos are the Following :

Events and Trophies	Bosch-Equipped Winners
The Glidden Tour.....	Chalmers
"Prince Henry" Tour (Germany)	Austrian Daimler
Kaiser Nicholas Tour (Russia).....	Mercedes
Harrisburg Reliability Run.....	Pullman
Coupe des Voiturettes (France).....	Zuccarelli
24-Hour Brighton Beach Race (May).....	Simplex
Prest-O-Lite Trophy	National
Wheeler & Schebler Trophy.....	Marmon
Remy Brassard & Trophy.....	Marmon
24-Hour Brighton Beach Race (Aug.).....	Stearns
Elgin Trophy	Lozier
Illinois Trophy	National
Kane County Trophy.....	Marmon
Fox River Trophy.....	Benz
Cobe Trophy Race.....	Marmon
G. & J. Trophy.....	Falcar
Remy Trophy	Marmon
Indianapolis Speedway Helmet.....	Benz
Remy Brassard & Trophy.....	National
100-Mile Free-for-All	Benz

Events and Trophies	Bosch-Equipped Winners
50-Mile Free-for-All	Benz
200-Mile Free-for-All	National
Algonquin Hill Climb.....	National
Vanderbilt Cup Race.....	Alco
Wheatley Hill Trophy.....	Falcar
Fairmount Park Trophy.....	Chadwick
Fairmount Class 5.....	Lozier
Fairmount Class 4.....	National
Fairmount Class 3.....	Pullman
Fairmount Class 2.....	Abbott-Detroit
City of Atlanta Trophy.....	Marmon
Coco Cola Trophy	Falcar
Atlanta Speedway Grand Prize.....	Lozier
Phoenix Desert Race.....	Kissel
Grand Prize Race.....	Benz
Savannah Challenge Trophy.....	Marmon
Tiedeman Trophy	Lancia
Ferris Cup (Santa Monica).....	Lozier
Free-for-All (Santa Monica).....	Lozier
Shettler Cup (Santa Monica).....	Durocar
Light Car Race (Santa Monica).....	Maxwell

20 of the 21 great American Road Races were won by Bosch-Equipped Cars.

22 of the 23 total Long Distance Races on the Indianapolis, Atlanta and Los Angeles Speedways during 1910 were won by cars using Bosch Magnetos: A total 42 of the 44 big events — 95 per cent.

INSIST ON HAVING A "BOSCH"

See Our Exhibit at the Coliseum

BOSCH MAGNETO COMPANY

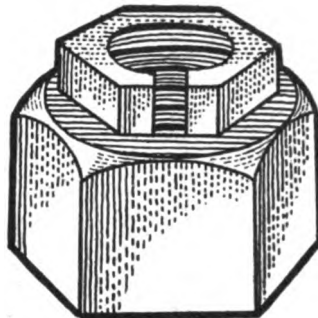
New York

Chicago

Detroit

San Francisco

"It Stays Put"



Put an Improved Columbia Lock Nut anywhere on your car and it "stays put." It actually LOCKS the parts together and while it is easily un-locked the unlocking must be intentional and done with a wrench or similar tool, Vibration, shocks or jars have absolutely no effect on Improved Columbia Lock Nuts.

Their adoption and general use by the great railroad systems of the country is significant. Improved Columbia Lock Nuts should be used on every vital part of a motor car.

Let us send you our booklet "A Nut that Locks and Why" telling all about it.

COLUMBIA NUT & BOLT COMPANY

Bridgeport, Conn.

Inter-State

THREE years ago we built the first Inter-State. When our big factory was completed we gathered there some of the greatest Automobile Brains in the country. We paid for these brains, as we paid for the very finest factory construction; we installed the highest type of machinery.

All this spelled permanency—stability. It was not a venture else we would have bought a cheap plant and cheap brains. We would have hurriedly built our cars to supply the "motor-car mad."

The reaction proved fatal to those of the fraternity, who in a "get-rich-quick" frenzy to supply an unhealthy market, fairly "threw" their cars together and whizzed them to the dealers.

The "assembled" cars are suffering keenly. As we predicted three years ago, the car manufactured under one roof and under the supervision of one corps of experts is the popular car today and for the future.

The Inter-State is painstakingly built *in our own factory*. We have sufficient capital to supply our raw materials, to buy the *best*, to be content with a fair margin of profit.

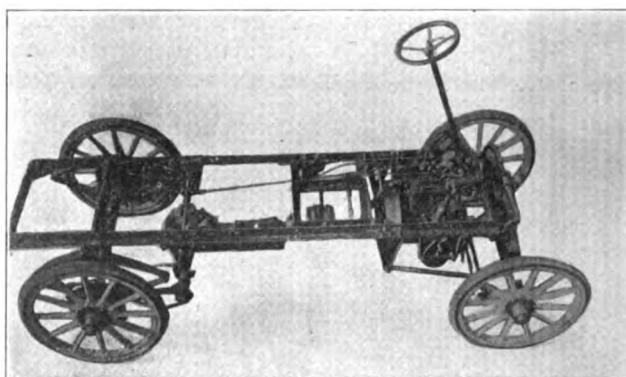
As an evidence of popularity of our "high-quality-sane-price idea," four more acres of factory floor space have recently been built for the logically increased output of Inter-States.

New catalog M. W. 29 upon request.

Inter-State Automobile Company
Muncie, Indiana

(78)

*Model 14—4-passenger, 40-h. p. Torpedo
\$2,000. Special equipment*



WHERE THE MONEY GOES— Repairs

It costs from \$25 to \$50 to tear down the average truck, clean and examine its parts and re-assemble—**exclusive of the actual work of repairs**. It costs more to get at the defective part than it does to make it right—**BECAUSE OF THE WAY THEY ARE PUT TOGETHER**.

Economy trucks will save 75% of your repair bills—**BECAUSE OF THE WAY THEY ARE PUT TOGETHER**—Unit assembly.

Economy engines can be entirely removed or replaced in 45 minutes; transmissions in 35 minutes; radiators in 15 minutes, and jack-shafts in 20 minutes, either part without disturbing the other two and all without disturbing the body.

CONVENIENT? Nothing like it on the market.

ECONOMICAL? After all, it is not the **first cost**, but the **repairs and up-keep** that staggers the owner.

The Economy elements are the best the market affords; Davis motors, Ball transmissions, Muncie jack-shafts, Tut-hill springs, Sheldon axles, Hayes wheels, Long radiators and Foster steering gears.

Bodies to suit your requirements.

The Economy truck is **not** the development of an engineer's idea; it is the result of **experience**. It is built from the **users standpoint**. We've been at it four years.

Two capacities only, 1000 lbs. and 2000 lbs.

We would like to correspond with garage and repair men with the object of establishing Economy Maintenance Stations.

We do not require the purchase of a demonstrator.

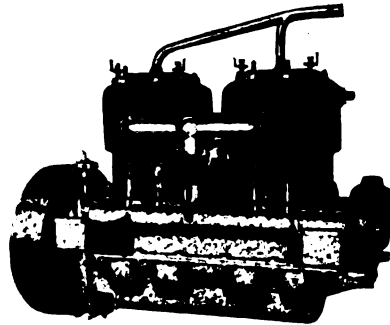
ECONOMY MOTOR CAR COMPANY

Bissel and Cass Sts.

JOLIET, ILL.



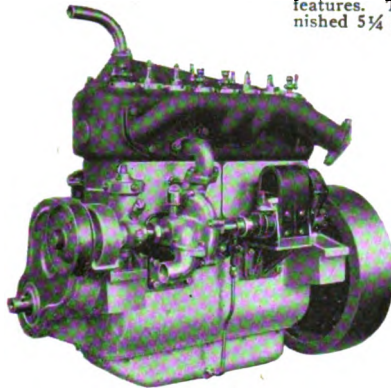
For months past you have been told about these new motors. They are now at the Chicago Automobile Show, Space 65.



Model "T"

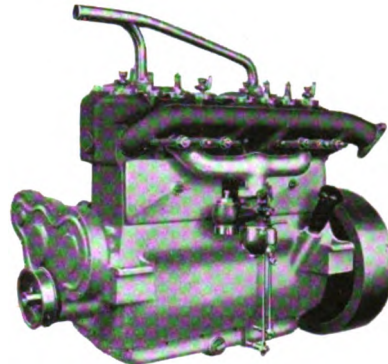
Cylinders $5 \times 5\frac{1}{4}$ -in., cast in pairs. "T" head type with main frame construction. Special automatic oiling system, liberal bearings, large valves and other notable features. This model of motor will be furnished $5\frac{1}{4} \times 5\frac{1}{4}$ size.

These motors are the acme of high grade workmanship and design, embodying the up-to-date features. Examine them at the Chicago Auto Show, Space 65.



Model "C"

Cylinders $4\frac{1}{2} \times 5\frac{1}{4}$ -in., cast en bloc. "L" head type, furnished in main and subframe construction. Also supplied in complete unit power plant using multiple disc clutch and selective type transmission. This motor will also be supplied in $3\frac{3}{4} \times 5\frac{1}{4}$ -in. size.



Model "E"

Cylinders $4\frac{1}{2} \times 5\frac{1}{4}$ -in., cast in pairs. "L" head type, supplied in both main and subframe construction. This motor can be had in complete unit power plant using multiple disc clutch and three speed selective type transmission.

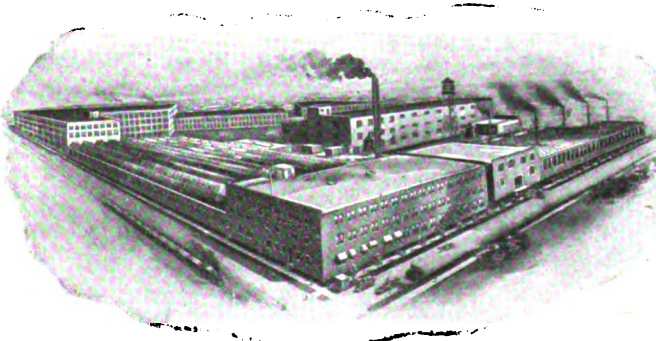
OONTINENTAL MOTORS

For the Season of 1912

The above mentioned motors are the ones that have caused such a furor in the motor world. Even during their "blue print" stage, they received the approval of many leading car manufacturers, and you can feel assured that every effort on our part has been made in producing those motors which are sure to satisfy the most exacting pleasure and commercial vehicle manufacturers. Prices and full data are now awaiting you. **EXAMINE THESE NEW MODELS AT THE CHICAGO AUTOMOBILE SHOW, SPACE 65. CONTRACT NOW FOR YOUR 1912 REQUIREMENTS.**

CONTINENTAL MOTOR MFG. CO., Muskegon, Mich.

Factory Representative
K. F. PETERSON
150 Michigan Avenue
CHICAGO, ILL.



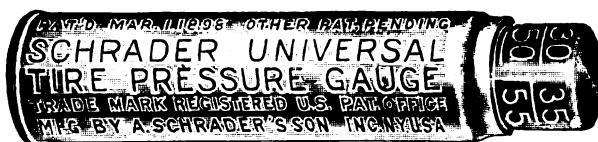
Factory Representative
L. D. BOLTON
1010 Ford Building
DETROIT MICH.

Factory Capacity 25,000 Motors Per Annum

Mr. Automobilist:

Your tire maker is very anxious to impress upon you the importance of TIRES INFLATED TO THE RIGHT PRESSURE. He insists that this is tire economy and SAVES YOU MONEY. How do you know what pressure you have in your tires?

A Schrader Universal Tire Pressure Gauge



Will tell the exact pressure in your tires at any time, day or night, by simply holding this GAUGE to your valve for a second. Its recording sleeve remains in place, showing the exact pressure in the tire so that the GAUGE can be taken anywhere and read, at night to the front of the car into the light of the lamps. After the pressure has been ascertained the INDICATING SLEEVE can be pushed back into the GAUGE with your finger. No catches or snaps to operate or get out of order.

This GAUGE is of great value to the user of DEMOUNTABLE RIMS, as the SPARE WHEELS carried must always be in readiness, and in order to be so they must at all times have the tires properly inflated. This can easily be ascertained without any exertion or inconvenience, by the use of the SCHRADER UNIVERSAL TIRE PRESSURE GAUGE.

This GAUGE is $2\frac{1}{2}$ inches long over all, short enough to apply to the smallest diameter of wheel, and can easily be carried in the vest pocket, or the change pocket of your trousers. It is enclosed in a leather case, keeping the gauge free from dirt and other particles accumulating in the pockets.

Price, \$1.00 each. READY for delivery NOW. GUARANTEED SIMPLE AND ABSOLUTELY ACCURATE. Can be obtained from all tire manufacturers, jobbers and the dealers, or

A. SCHRADER'S SON, Inc., 28-32 Rose St., New York City

ESTABLISHED 1844

Schrader Universal Valves

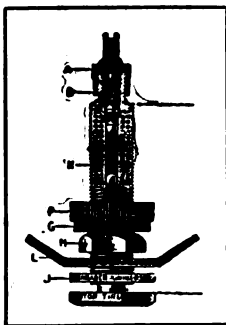
Trade-Mark Registered April 30, 1895

SIMPLE AND ABSOLUTELY AIR TIGHT, SCHRADER MOTOR TIRE VALVES, as shown in cut, are the regular equipment for G. & J. style Motor Tires, whether used on ordinary rims or demountable rims, such as Michelin or Continental Ready-Flated Tires, and are also used on Hartford Detachable, Fisk Detachable and New Goodyear Detachable Motor Tires.

Our No. 777 Motor Tire Valve is the standard for $2\frac{1}{2}$ -in. and 3-in. Tires, and our No. 725 Motor Tire Valve is the standard for tires larger than 3-in.

SCHRADER UNIVERSAL VALVES are used on all Bicycle tires made in this country.

These Valves and Valve Parts can be obtained from all tire manufacturers, jobbers and the dealers, or



A. SCHRADER'S SON, Inc.

28-32 Rose Street

NEW YORK CITY

Continental **TIRES**

First Choice of Discriminating Motorists

on account of their

SUPERIOR QUALITIES

TO-DAY the motorists' demand for a tire—long-wearing, resilient and suitable for all seasons of the year, is found only in the Continental equipment. Greater value in auto tires cannot be obtained in any other make.

TRAXION TREAD

Can't Slip—Anywhere—Any Time

Constructed with many rubber studded projections guaranteed to grip the road surface and assure powerful traction on the slipperiest pavements or removal from the deepest mud holes. A safeguard for passengers and cars.

TYPE COURSE (Flat Tread)

Starts to Wear When Most Others Are Worn Out

Combining every detail of manufacture to withstand the most severe service and also giving wonderful mileage. Particularly adaptable for those motorists desiring speed, safety and comfort, yet absolutely reducing the usual excessive tire expense casual in other ordinary makes.

A Tire for Every Car

A Tire for Every Purpose

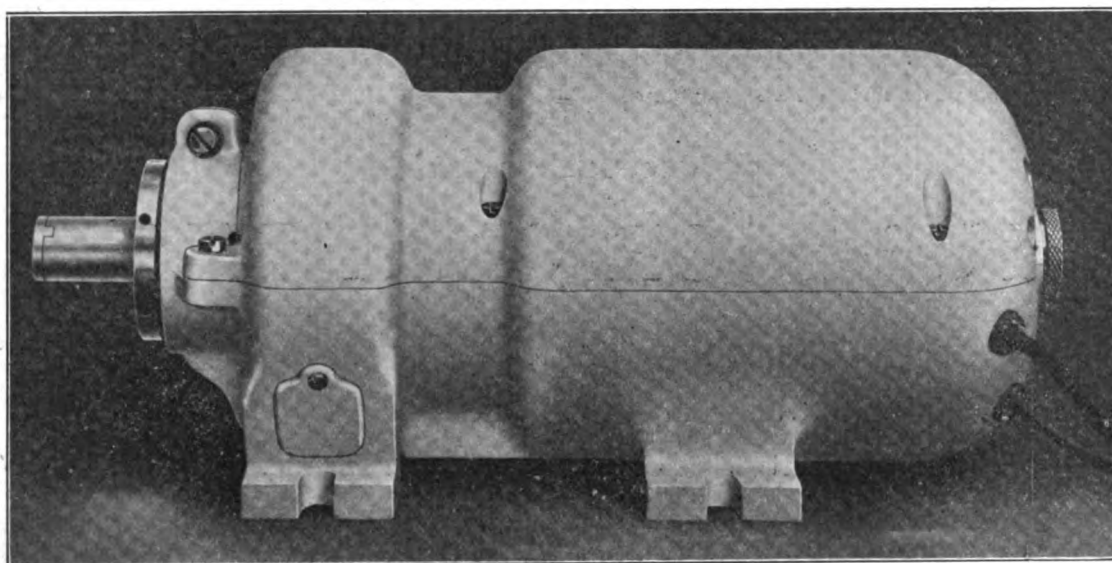
Continental Caoutchouc Company

1788-90 Broadway, New York City

1412-14 Michigan Blvd., Chicago, Ill.

Auto Show, Space 10, Coliseum Gallery

Some Reasons Why You Should Use the GRAY & DAVIS Dynamo System



DYNAMO SYSTEM TYPE "C"
One-half life size. Weight complete, as shown, 19 1-2 lbs.

Provides current for your lamps and horn.

Charges your batteries.

A remarkable convenience—just as easy as turning the switch on an electric bulb in your home.

Enables you to properly place the light rays

on the road and gives absolutely perfect focus.

Lights an inspection lamp of 16 c. p and displaces the old style inspection lamp of 2 or 3 c. p.

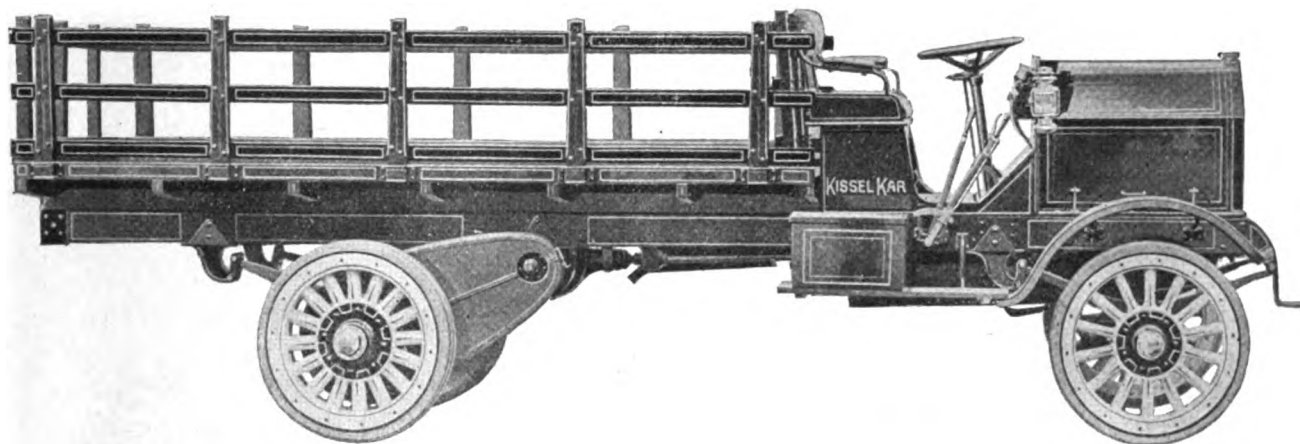
Your batteries can't "run down."

You concentrate on the road and don't blind the occupants of the car approaching.

Get the Gray & Davis Dynamo System for your car. It does what no other system can do. Favors battery by putting in tapered charge. Cooled by forced draught. Favors lamps (an exclusive feature) and runs one 2 c. p. lamp and all five lamps without batteries being connected. Compound Wound when lighting lamps. Shunt Wound when charging batteries.

Write for full description — do it now.

GRAY & DAVIS, Manufacturers of the famous GRAY & DAVIS Lamps Amesbury, Mass.



KISSEL KAR 3 TON TRUCK

The Truck with Plenty Reserve of Horsepower

The hauling ability of a motor truck on ideal roads is no indication of its real service ability.

To effect economical, dependable delivery it must be master of all road conditions—grades, mud, snow, sand, etc. It must have a reserve of horse power.

Most trucks of listed 3 ton capacity have from 24 H. P. to 45 H. P. motors. The Kissel Kar 3 Ton Truck is 50 H. P., providing a reserve of horse power that makes its dependability and hauling ability positive.

This greater reserve of horse power, combined with the distinctive double wheel drive at will of driver, makes the Kissel Kar Truck the one truck of unquestionable dependability under all road conditions.

Not only does the Kissel Kar 3 Ton Truck provide a generous reserve of horse power, but a reserve of strength and durability. While it is rated as a 3 ton truck, it is built to be equal to the occasion when stress of business may necessitate loading in excess of 3 tons. In other words, the Kissel Kar 3 Ton Truck has reserve capacity and the reserve horse power to handle excess loads.

Another factor of greater dependability is the patent lock on the differential with foot lever control, by which the driver at will can lock both rear wheels together. In instances where one wheel is on ice, in a hole or in mud, the wheel on solid ground supplies the traction, thus preventing the stalling common with one wheel drive trucks when their single drive wheel turns without traction. The motor is simple in design, with

positively driven oiling system and is simple in operation.

In competitive runs, the Kissel Kar 3 Ton Truck has demonstrated its economy by using from 15% to 20% less gasoline than average trucks of same capacity.

For fast, economical, dependable delivery, the Kissel Kar 3 Ton Truck is decisively the superior 3 ton truck. Write for detailed description.

50 H. P., \$3500—144 in. wheel base—68 in. head—230 in. total length—6 ft. x 12 ft. 5 in. load space—10 to 12 miles per hour on third speed, direct drive—15 miles on fourth geared up speed.

KISSEL MOTOR CAR CO., 159 Kissel Ave., Hartford, Wis.

Licensed under Selden patent.



Let us help in solving that
MANUFACTURING PROBLEM

- ☞ By furnishing your axle equipments in carload lots as you need them and when you need them.
- ☞ Our standard equipments include all the improved types in use.
- ☞ I beam or tubular fronts, chain or bevel drive rears, cup and cone-annular or roller type bearing.
- ☞ We are specialists in this line and our experience is at your disposal.

THE AMERICAN BALL BEARING CO.
L. S. & M. S. Ry. and Edgewater Park
CLEVELAND, OHIO

BROWN-LIPE GEAR COMPANY

BROWN-LIPE-CHAPIN COMPANY

Announcement

On January 1st our Differential Gear Department began to be operated by the Brown-Lipe-Chapin Company in its magnificent new plant; capacity, 200,000 Differentials per year.

Our Transmission and Steering Gear Departments will continue as heretofore only with facilities increased many times.

We are preparing a line of Transmission, Steering and Differential Gears for trucks and delivery wagons and will work up this branch of the business, which for lack of facilities we have been unable to properly do heretofore.

All Will be Brown-Lipe Gears

Both plants will be under the same management and selling organization; the stockholders of the Brown-Lipe Gear Company holding a controlling interest in the new company. Both factories at Syracuse, N. Y. High quality and prompt service is our motto.

H. W. CHAPIN, General Manager

SALES REPRESENTATIVES.

THOS. J. WETZEL, 17 W. 42nd St., New York, N. Y. K. FRANKLIN PETERSON, 150 Michigan Ave., Chicago, Ill.
L. D. Bolton, 1810 Ford Bldg., Detroit, Mich.

ONLY FOUR TRUCK BUILDERS

Do Not Use TIMKEN Roller Bearings

on the commercial cars exhibited at the Madison Square Garden Show!

Commercial Cars	Number of Cars Shown	Front Wheel Bearings	Rear Wheel Bearings
Stearns	1	TIMKEN	TIMKEN
Morgan	1	TIMKEN	TIMKEN
Pierce	1	TIMKEN	TIMKEN
Waverley	2	2 TIMKEN	2 TIMKEN
Knox	3	3 TIMKEN	3 TIMKEN
Peerless	2	2 TIMKEN	2 TIMKEN
Hewitt	3	3 TIMKEN	3 TIMKEN
Autocar	10	10 TIMKEN	10 TIMKEN
Reliance	3	3 TIMKEN	3 TIMKEN
Rapid	4	4 TIMKEN	4 TIMKEN
Sampson	1	1 Ball	1 TIMKEN
Grabowsky	7	7 TIMKEN	7 TIMKEN
Lansden	5	5 TIMKEN	5 TIMKEN
Studebaker	5	5 Plain	5 Plain
White	3	3 Plain	3 Plain
Packard	7	7 Ball	7 Ball
Mack	3	3 TIMKEN	3 Ball
Alco	6	6 TIMKEN	6 TIMKEN
General Vehicle	6	6 TIMKEN	6 TIMKEN
Detroit Electric	2	2 TIMKEN	2 TIMKEN
Pope	2	2 TIMKEN	2 TIMKEN
Franklin	2	2 TIMKEN	2 TIMKEN
Reo	4	4 TIMKEN	4 TIMKEN
Overland	2	2 TIMKEN	2 TIMKEN
Brush	3	3 TIMKEN	3 Ball
Atlas	3	3 Ball	3 Ball
Randolph	3	3 TIMKEN	3 TIMKEN
McIntyre	2	2 TIMKEN	2 TIMKEN
Garford	2	2 TIMKEN	2 TIMKEN
Ward	3	3 TIMKEN	3 TIMKEN
Kissel	1	1 Plain	1 Plain
Locomobile	1	1 TIMKEN	1 TIMKEN
	2	2 TIMKEN	2 TIMKEN
	2	2 TIMKEN	2 Ball

THE TIMKEN ROLLER BEARING CO., Canton, Ohio, U. S. A.



Line of Unexcelled
CARS
At Unequaled Prices

SEVEN MODELS
\$850 to \$1600

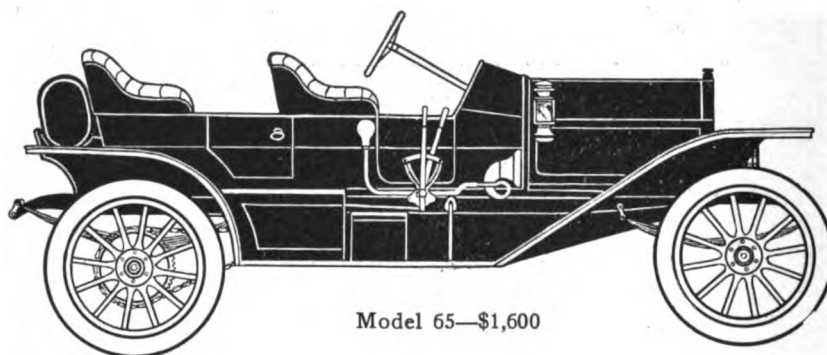
There are today no better, more refined or more durable cars on the American market than PETRELS. These first-class cars of the soundest and best construction and the most finished appearance, are sold at prices surprisingly close to what it costs to produce them by the most modern and up-to-date methods.

Representatives of the PETREL MOTOR CAR COMPANY are located everywhere and they are willing to show you the splendid construction and demonstrate the splendid serviceability of these cars.

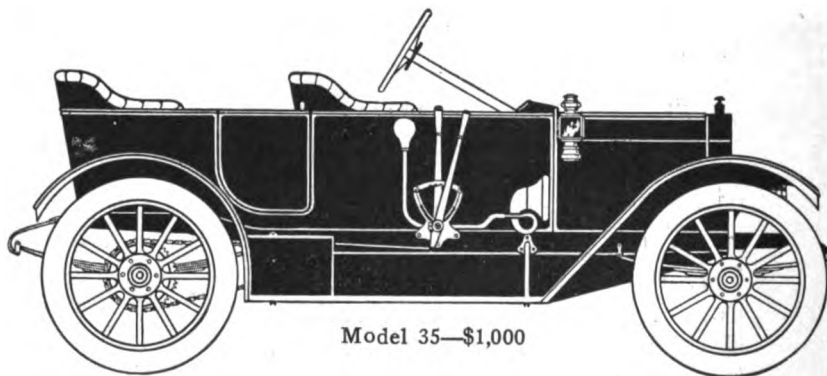
Let us tell you where you can see them and explain to you why they are THE cars of all others you should buy.

PETREL CARS will be on exhibit at the Minneapolis Show, February 18-25; at Des Moines, Iowa, March 7-11, and at Kansas City, Mo., February 27 to March 4.

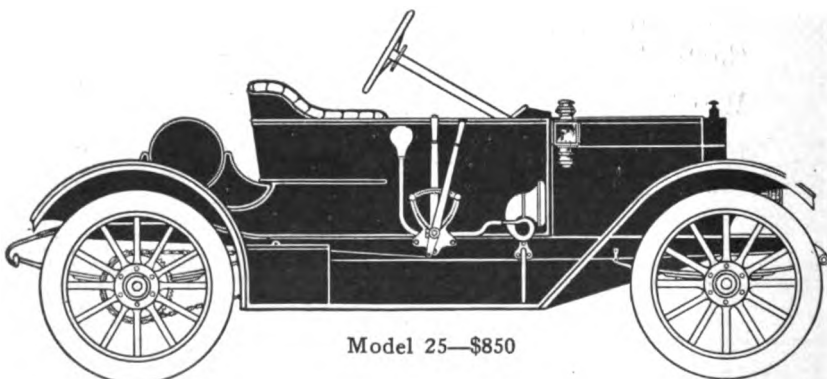
Petrel Motor Car Co.
 4th Avenue and Virginia Street
 MILWAUKEE, WISCONSIN



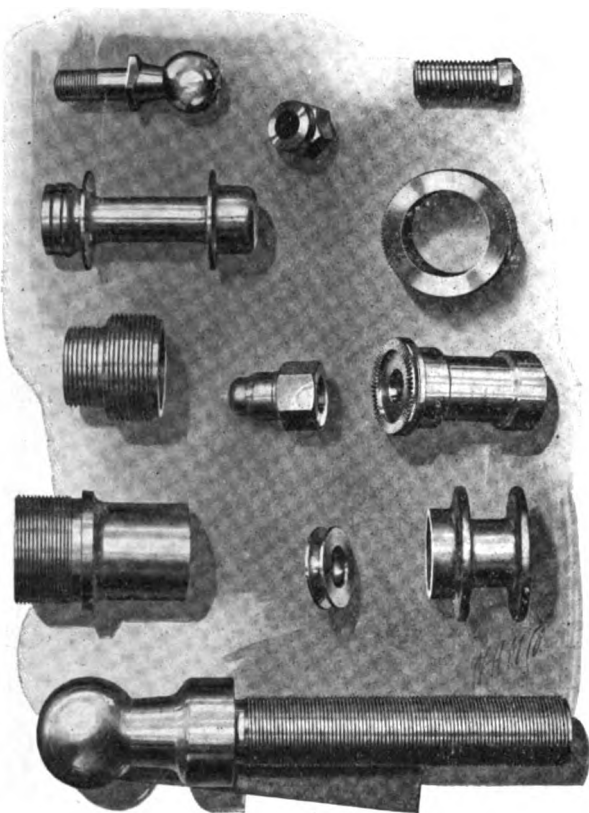
Model 65—\$1,600



Model 35—\$1,000



Model 25—\$850



PREFERRED PRODUCT

YOUR Product is no better than its parts—have the best. Acme Parts are made by special machinery which is particularly adapted to the rapid production of all kinds of screws, nuts, bolts, plugs, pins, etc., for the trade. Hundreds of makers of automobiles, accessories, engines, electrical supplies, etc., appreciate the accuracy and elegance of finish common to all Acme Products.

Send us your samples for quotations, prices and deliveries that will please.

The National-Acme Mfg. Co. Cleveland, Ohio

New York, 77 White St. Chicago, 549 Washington Blvd. Boston, 141 Milk St.
Detroit, 1222 Majestic Bldg. Montreal, Canada. Atlanta, Candler Bldg.
Warehouses: Chicago; New York. Factories: Cleveland; Montreal, Can.

What the

CONNECTICUT

**SHOCK
ABSORBER**

Will Do For You

CONNECTICUT Shock Absorbers make touring a pleasure—you can cover double the distance without fatigue. You can drive your car over cobble stones, over rough country roads with ease and without throwing the occupants of your automobile out of the seats. They make

EVERY CAR A PARLOR CAR.

The CONNECTICUT Shock Absorber will more than save its cost in spring breakage alone; it will save wear and tear on your tires, and the entire mechanism of your car, principally your engine.

CONNECTICUT Absorbers are an investment which will pay you good dividends; they are an absolute necessity for your comfort. They are not unsightly on your car, but neat and attractive in appearance.

**Connecticut Shock Absorbers
Are Sold Installed on the Car.**

Send for particulars and free catalog No. 24. A set of absorbers will be sent on trial.

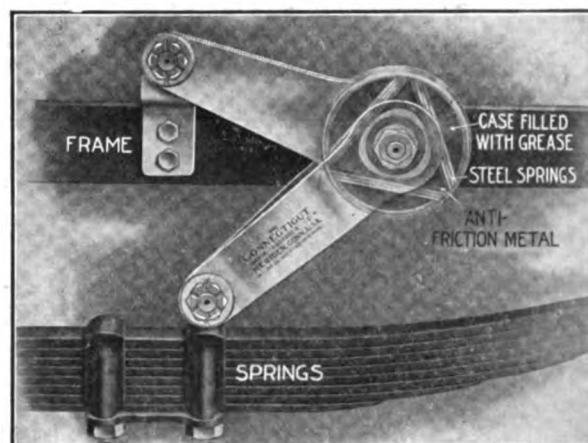
The Connecticut Shock Absorber Co., Inc.

20 Britannia Street

MERIDEN, CONN.

PACIFIC COAST BRANCHES:

San Francisco, 544 Van Ness Ave.; Los Angeles, 1038 So. Main St.;
Seattle, 924 E. Pike St.; Portland, 329 Ankeny St.



Front and Rear Axles—for Light and Heavy Cars

We place at the car builder's disposal not only products of the highest quality and reputation, but matchless manufacturing facilities, years of experience and good, old-fashioned honesty in manufacturing, and the ability to deliver as scheduled.

The Lewis and American companies build rear axles on individual or stock designs—and you can bank on it that better axles are not to be bought, because they aren't made.

Front axles are drop forged.

AMERICAN DISTRIBUTING CO., 1030 S. Park St., Jackson, Michigan

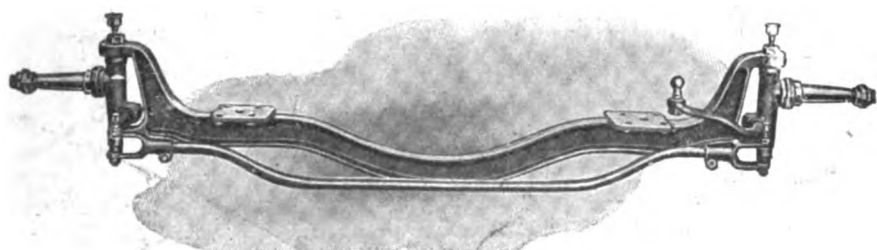
SALES AGENTS FOR

The Lewis Spring & Axle Co.,
Jackson, Mich.

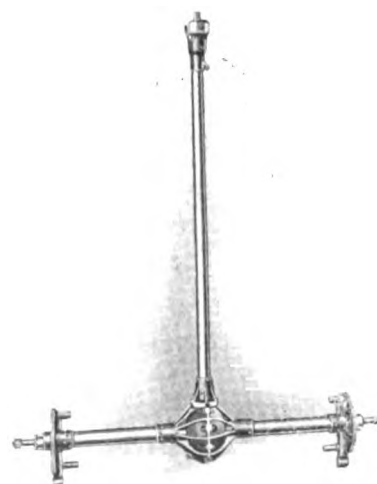
American Gear & Manufacturing Co.,
Jackson, Mich.



No. 8 Rear Axle—One of several Lewis models, each beyond comparison for quality.



No. 4 Front Axle—Four models, covering all requirements.



American Gear & Mfg. Co.'s Rear Axle
for light cars.

Transmissions, Pressed Metal Parts and Wheels—for All Types

The five companies represented on these pages are making parts for some of America's finest and sturdiest cars—that is how they stand in the industry.

Frost gears are noted for the accuracy of their cutting, their hardness and strength and their long life.

Sparks-Withington pressed metal parts are fit for the costliest cars made—and are found in many.

Hayes wheels are used by the most exacting pleasure and commercial car builders in the country.

All the products here represented are marketed exclusively through us.

AMERICAN DISTRIBUTING COMPANY

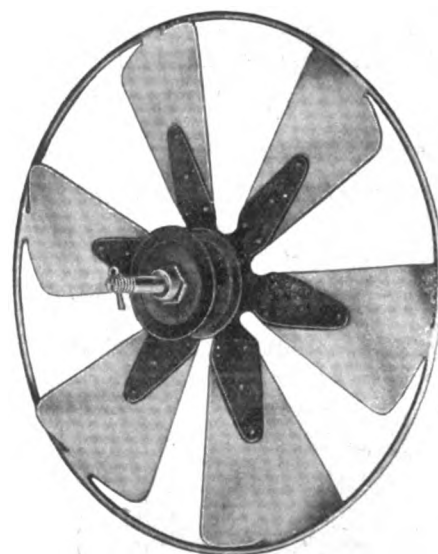
1030 S. Park Street, Jackson, Michigan

SALES AGENTS FOR

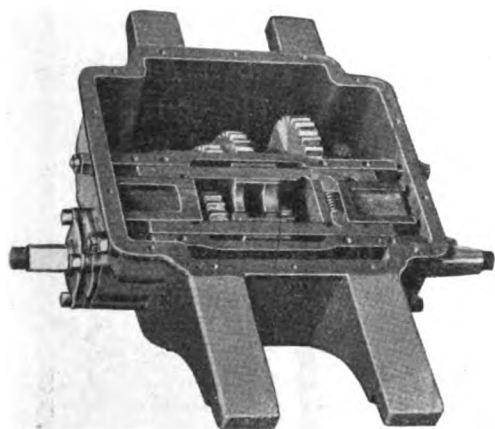
Frost Gear & Machine Co.,
Jackson, Mich.

Hayes Wheel Co.,
Jackson, Mich.

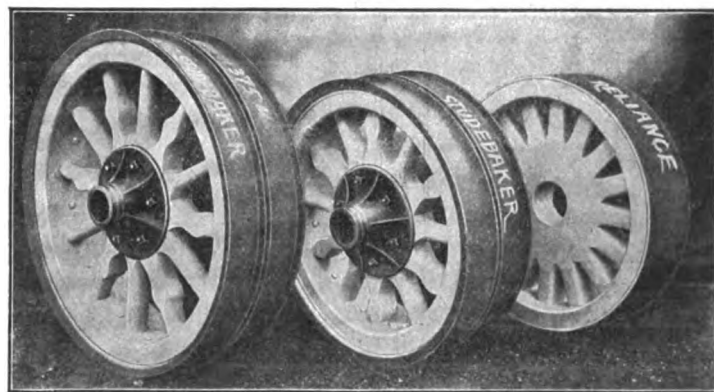
Sparks-Withington,
Jackson, Mich.



One of the Sparks-Withington numerous products in pressed metal.



New Frost Plain Bearing Sliding Gear, Selective Type Transmission. Quadrant in shifter slide cover removed. Three speeds and reverse.



Several Types of Hayes Wheels for heavy trucks. All types for pleasure cars also produced.

ARE YOU INTERESTED IN

Solid Steel Castings

absolutely free from blow holes which will positively machine with the least possible expense, eliminating usual loss of machining defective castings?

TENSILE STRENGTH 60,000 POUNDS OR OVER. CASTINGS GUARANTEED
SMOOTH AND TRUE TO PATTERN. PROMPT DELIVERIES

PRICE WILL INTEREST YOU. May Our Representative Call?

SEND BLUE PRINTS FOR ESTIMATE

INLAND STEEL CASTING COMPANY, Terre Haute, Ind.

Manufacturers of Crucible and "Bull Dog" Annealed Steel Castings.

The Pioneers to Employ 92%
of Balls in the Raceway



SCHAFER Ball Bearings Fear No Comparison

AXIAL PRESSURE Thrust capacity of SCHAFER BEARINGS being equal to one-third the advocated load, the thrust capacity of all other makes of bearings being equal to only one-quarter of their advocated load—and since our advocated loads are far greater than those of any other known ball bearing—SCHAFER BEARINGS enjoy a 60 per cent. greater thrust capacity than all other makes. May we prove this to you?

WRITE FOR CATALOGUE

SOLE IMPORTERS

BARTHEL, DALY & MILLER, 42 Broadway, New York City

Kelly-Springfield Automobile Tires



The name "Kelly-Springfield" has identified the best in tires since rubber was first applied to wheels.

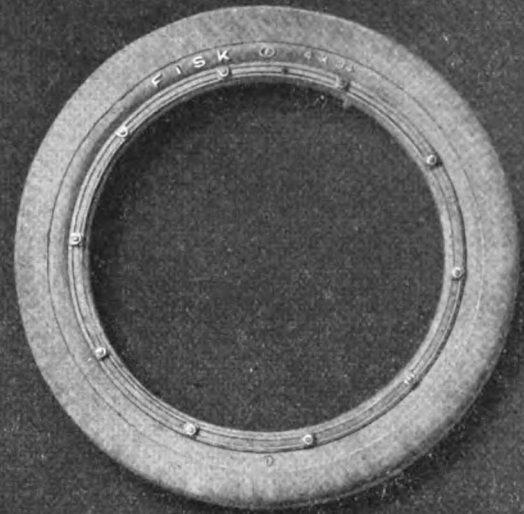
The automobile called for a different tire, but not for a different standard of quality. You can depend upon the Kelly-Springfield for your car just as drivers have depended upon it for their carriages during the past fourteen years.

Specify Kelly-Springfield Tires on your automobile. They cost no more than any first-class tire and are better.

CONSOLIDATED RUBBER TIRE COMPANY
20 VESEY STREET, NEW YORK

Branch Offices:

New York, Chicago, Philadelphia, Boston, St. Louis,
Detroit, Cincinnati, San Francisco, Los Angeles and Akron, O.



SERVICE AND SATISFACTION

are assured if your Tire Equipment is

FISK

The name that stands for Quality,
Mileage and a Fair Deal for each
and every customer.

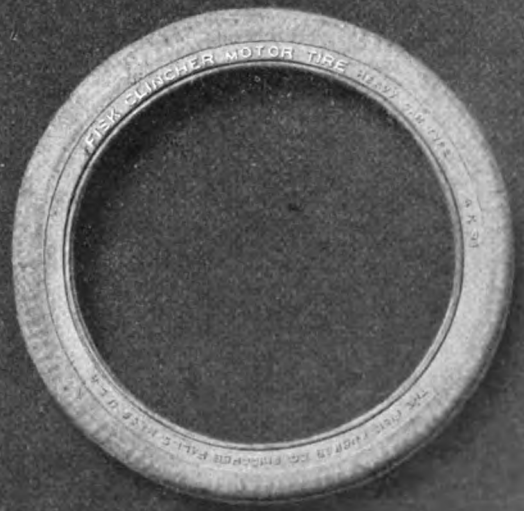
Investigate and Compare Before You Buy.

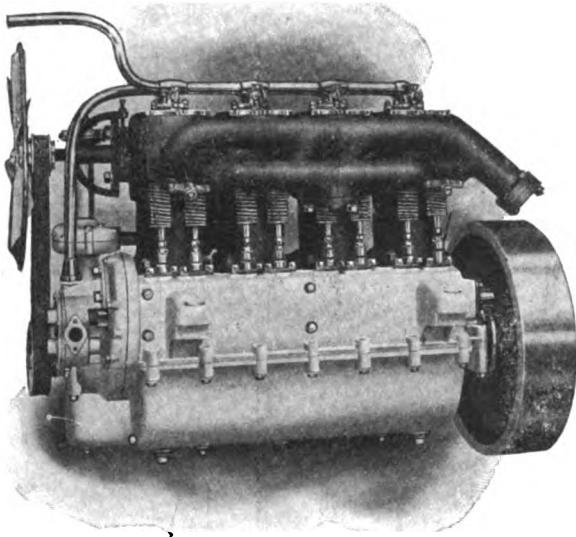
Tires for Every Rim — Bolted-On,
Clincher, Q.D. Clincher, Fisk-Dunlop.

The Fisk Rubber Co.

Dept. 23 Chicopee Falls, Mass.

Direct Factory Service in 23 Cities



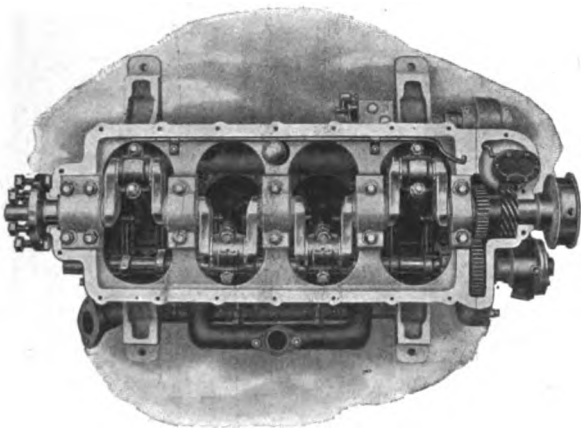


RUTENBER MOTORS

Are the Talk of the Show

Many contracts have been closed for quantities of motors to be supplied to commercial and pleasure car manufacturers. The RUTENBER motor was only selected on account of its being so far superior in design and construction and workmanship and from having the record of the past of being a motor that was equal to any circumstances.

Every Motor Guaranteed for Life

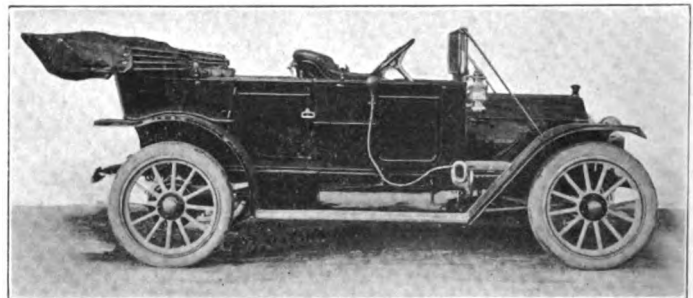


THE WESTERN MOTOR CO.
MARION and LOGANSPOUT, INDIANA
Address Sales Dept. R, Marion, Indiana

You Can Pay More

for an automobile, but if you spend twice the amount of money you can obtain no more intrinsic value in materials, quality of workmanship or design, nor a car that will run as well and give more lasting satisfaction than a

Pullman



"Not only the best at the price but the best at any price"

The PULLMAN car has the solid strength of construction that means freedom from repairs. It has the power, the speed, the size to take you anywhere at a low consumption of gasoline and oil.

The PULLMAN is an exceptionally powerful and reliable car built to fulfill every requirement of touring. Every part bears a perfect relation to every other part which makes the Pullman a perfectly proportioned car—a car in which the correct suspension of every part greatly reduces the wear on tires.

In 1910 the PULLMAN won every endurance and speed contest in which it was entered, several times defeating cars of three times the PULLMAN cost and horsepower.

"Pullman Performances Prove Its Perfection"

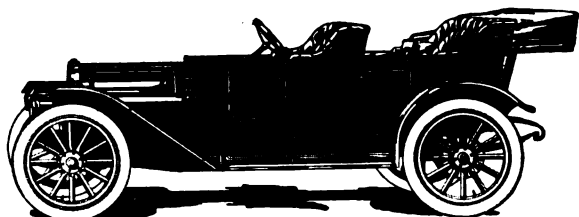
Prices, \$1650 to \$4000; 30, 35 and 50 horsepower.

Write for catalog and testimonials of owners.

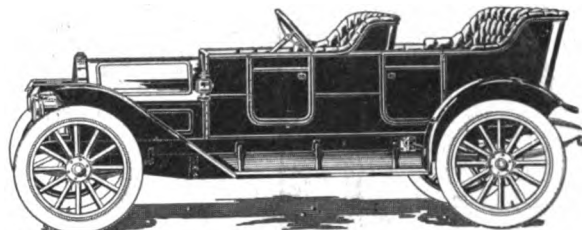
PULLMAN MOTOR CAR CO.
Drawer W YORK, PA.

THE ELIMINATION OF EXTRAVAGANCES

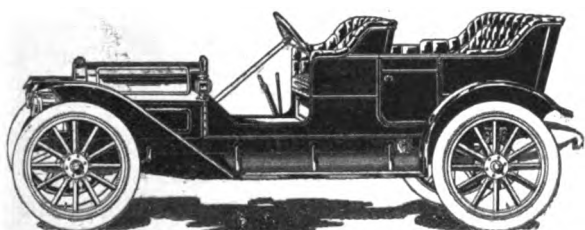
now is in process in the automobile business. There are a lot of them for which the purchasers of automobiles have paid high and which brought them no return. It was by avoiding these extravagances, these costs of high living, so to speak, that DeTamble cars were placed on the market at prices that set a new standard of values. You can't pay more and get your money's worth. Study the specifications.



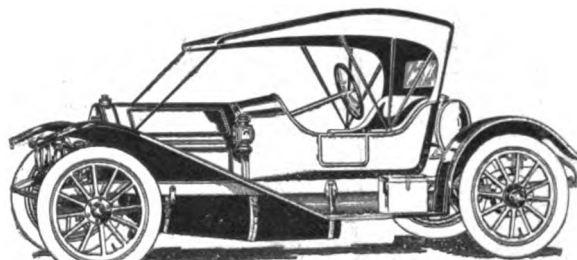
Model K—7-Passenger Fore Door—\$1,675.



Model J—5-Passenger Fore Door—\$1,200.



Model H—5-Passenger Touring Car—\$1,150.



Model G—2-Passenger Roadster—\$1,000.

MODEL K 40—45 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; full floating ball bearing rear axle; 120-in. wheel base; 34-in. wheels; Spitzdorf magneto; dual ignition; Rushmore gas lamps; Prest-O-Lite tank; three oil lamps; horn; mohair top; wind shield; speedometer; tools; jack and pump.

SPECIFICATIONS:

MODELS G-H-J—36 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; semi-floating ball bearing rear axle; 115-in. wheel base; 34-in. wheels; magneto and dual ignition system; Rushmore gas lamps; generator; three oil lamps; tools; jack and pump.

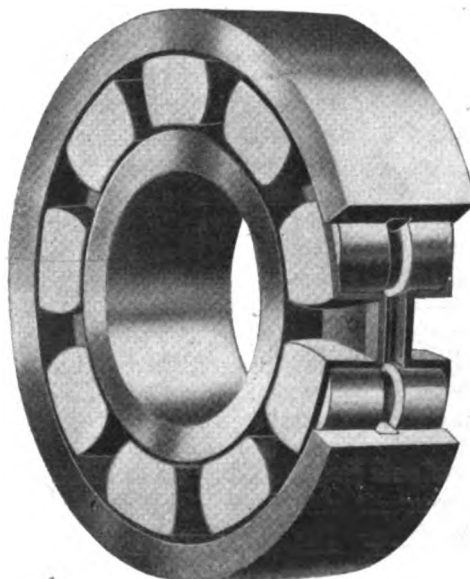
Catalog and full details of our complete line sent on request. [Open] territory proposition for live dealers.

THE De TAMBLe MOTORS CO., Anderson, Indiana

STANDARD ANNULAR ROLLER BEARINGS



Capable of 50 per cent. greater load than same size annular ball bearing.



Made in sizes interchangeable with all standard annular ball bearings.

See Our Exhibit, Space 4, Gallery, Coliseum, Chicago

STANDARD ROLLER BEARING COMPANY, Philadelphia, Pa.

"Weed Chains? Sure!"

**I always have Weed
Anti-Skid Chains on
my Car."**

*Shoe your Gasoline Steed
With the Anti-Skid "Weed."*

No car should leave the garage without **Weed Chains**. They are as necessary as gasoline; an absolute safe-guard against skidding or slipping, by which nine-tenths of all the automobile accidents are caused. **Weed Chains** can be applied to the car in a moment *without the use of jacks* and they occupy scarcely any room when not in use. They are as important as gasoline when it comes to the question of starting and *finishing* a trip.

They are a necessity if you want to save your tires and insure your passengers, yourself and your automobile against accidents. They are guaranteed to perform three times the mileage of any other anti-skidding device.

Weed Anti-Skid Chains (With the "Creeping Grip")

were the pioneer of all tire grips and made the automobile an All-the-Year pleasure—instead of only a Summer-Good-Roads car.

Weed Anti-Skid Chains cannot injure your tires because of the wonderful "creeping grip" and the great care used in manufacturing and inspection; made of the hardest steel electrically welded and tempered. *Every hook* is indelibly stamped with the name "**WEED**" which guarantees the "creeping grip."

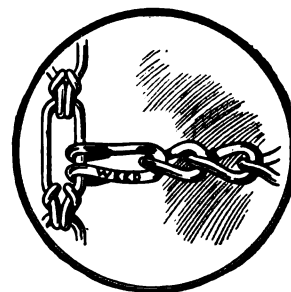
The weight and size of **Weed Chains** are proportioned carefully to the size of the tire. You can always get **Weed Chains** from reliable dealers; so be sure to get the right size, as it is part of the secret of tire preservation.

Weed Anti-Skid Chains are reversible and have triple the life of any other anti-skid device. A **Weed Chain** is really two grip chains in one, because it is reversible, and no other anti-skidding device is reversible.

Weed Chains on the front wheels help to steer as much as Weed Chains on the rear wheels prevent skidding. Try Weed Chains on your front wheels and see the difference at once.

Sold by all dealers who also carry extra parts which can be applied in an instant and are absolutely interchangeable. If your dealer happens to be out of them for the moment, send us his name and we will see that you are supplied immediately. See the name "Weed" on every hook. →

Weed Chain Tire Grip Company
28 Moore Street - - - - - New York City



This is the Verdict on No-Rim-Cut Tires

After selling half a million Goodyear No-Rim-Cut tires, these are the facts as we find them:

Last year our tire sales trebled—jumped to \$8,500,000. Yet No-Rim-Cut tires, during most of the year, cost one-fifth more than standard Clincher tires.

This year, *sixty-four leading motor car makers* have contracted for Goodyear No-Rim-Cut tires.

At the big Automobile Shows held this year, up to

this writing, more pneumatic-tired cars were equipped with Goodyears than with any other make.

Among Goodyear customers, No-Rim-Cut tires outsell our Clincher tires *almost six to one*, now that the price is equal.

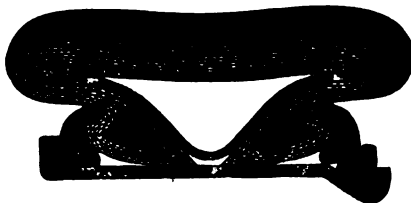
All of which shows that men who know are demanding No-Rim-Cut tires. The day of the Clincher is ending.

How They Cut Tire Bills in Two

Rim-Cutting Impossible

It is utterly impossible to rim-cut a Goodyear No-Rim-Cut tire. We have sold half a million to users. We have run the tires deflated in a hundred tests—as far as twenty miles. In all this experience there has never been a single instance of rim-cutting. And there never can be one.

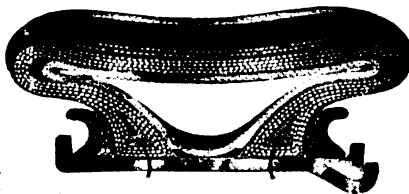
All this worry and expense is ended forever when you adopt Goodyear No-Rim-Cut tires. Let us explain.



Here is the clincher tire as we and others make it. The picture shows how these tires are fitted in any standard rim for quick-detachable tires. Also in demountable rims.

In using these tires the removable rim flanges must be turned to hook inward—as shown in the picture—to grasp hold of the hook in the tire. These tires are called "clinchers" because they hook into the flange. That is how the tires are held on.

When the tire is deflated, note how that thin rim flange digs into the tire casing—forced by the whole weight on the wheel. That is what causes rim-cutting, even when the tire is but partly deflated. In case of a puncture, the tire may be wrecked beyond repair by running a single block.



The 126 Braided Wires

Here is a Goodyear No-Rim-Cut tire fitted in the same standard universal rim. This tire has no hooks on the base. It does not need to be hooked into the rim flange. So the removable rim flanges are turned to hook outward. The rounded edge comes next to the tire, and rim-cutting is utterly out of the question.

The hooks were used because no man knew how to make an unstretchable tire base practical and safe. To prevent the tire from stretching over the rim we had to hook it into the flanges.

We get rid of this need by vulcanizing into the tire base 126 braided piano wires—63 on each side. This makes the tire base unstretchable. Nothing can force the tire off the rim. But, when you unlock and remove the rim flange, the tire comes off in an instant. There is no prying out as with clincher tires, where the hooks "freeze" into the flanges.

When the tire is inflated these braided wires contract. The tire is then held to the rim by a pressure of 134 pounds to the inch. It is so secure that no tire bolts are needed—none are used.

We Control It

These many braided wires, which contract under air pressure, form the only practical way to make an unstretchable tire base. And we control this feature by patent. Many other methods have been tried and discarded. This one alone has made the hookless tire practicable.

We recommend the clincher tire—as do others—where the braided wire base can't be used. But these braided wires perfectly solve the problem. They make the hooked tire unnecessary. They make rim-cutting avoidable. They are bringing a tremendous tide of demand to Goodyear No-Rim-Cut tires.

Tires 10% Oversize

Here is another great saving which this construction makes possible.

The No-Rim-Cut tire begins to flare outward right from the base of the

rim. Note the picture. It is not contracted by the hook-shaped flange.

This enables us to give you a tire 10 per cent wider than rated size, and yet perfectly fit the rim. And we give you this extra without extra cost.

That means one-tenth more tire for the money—10 per cent greater carrying capacity. It means, on the average, 25 per cent additional mileage.

The Reason Is This

Motor car makers adapt their tire sizes to the expected load. That means the weight of the car as they sell it and the weight of the passengers at 150 pounds each. In these days of close prices few motor car makers can afford to allow much margin.

But most owners add extras—a top, glass front, gas tank, gas lamps, extra tires, etc. And passengers sometimes weigh more than 150 pounds. As a result, the tires are overloaded beyond the elastic limit. The result is a blow-out, often while the tire is new. And the motor car owner, not knowing the facts, usually blames the tire.

To take care of these extras, and avoid this blame, we give you the 10 per cent extra size which the No-Rim-Cut style allows. And we give it without extra charge.

This oversize on the average, adds 25 per cent to the tire mileage. The No-Rim-Cut feature saves another 25 per cent. It is safe to say that these two features together cut tire bills in two on the average.

They cost nothing extra. You get them both by simply insisting on Goodyear No-Rim-Cut tires.

Our tire book tells how Goodyear tires have been gradually perfected through 12 years of ceaseless experimenting. It tells a hundred facts which motor car owners should know. Ask us to send it to you.

GOODYEAR
No-Rim-Cut Tires
With or Without Non-Skid Tread

THE GOODYEAR TIRE & RUBBER COMPANY, Arthur Street, AKRON, OHIO

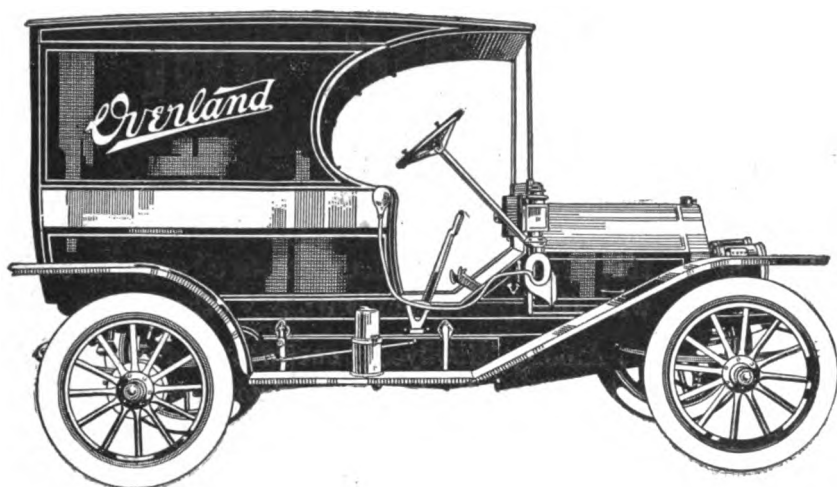
Branches and Agencies in All the Principal Cities

We Make All Sorts of Rubber Tires

Canadian Factory: Bowmanville, Ontario

Main Canadian Office: Toronto, Ontario

SEE OUR EXHIBIT AT THE BOSTON SHOW, F-543-4



OVERLAND LIGHT DELIVERY WAGON

Horsepower 25
Wheelbase 102 inches

Made with the enclosed
and open express bodies.

Price \$1000

Overland Delivery Cars—Winners of the Government Test

For two years, Overland Delivery Cars—like the ones pictured here—have been used in the Government Mail Service in Indianapolis.

Each one has done the work of three horse-drawn vehicles. Each has covered from 60 to 75 miles daily—winter and summer, rain and snow—without missing a single trip. They have done this for two years and are doing it still.

Recently these cars won the Government test for automobile mail wagons, conducted at Philadelphia. There were entered in this competition practically all other makes of similar automobiles, and the Overland won against all of them.

Of all the myriad uses to which these cars are put the Mail Wagon test is the most severe.

Mail Wagons must make their regular trips, every day of the year, regardless of weather. There have been times in Indianapolis when the snow put a stop to all other traffic, but the Overland Mail Cars made their trips.

Mail wagons must be dependable—must always keep running—for the mails cannot be delayed.

They must cover from 60 to 75 miles daily, making innumerable stops.

They must be simple, so any man can operate them. They must be easy to care for, as the operators are usually novices. They must be practically trouble-proof.

Overland Delivery Cars, for two years, have met all these requirements. They have won against all competition in the Government Mail Wagon test. The cars which have done this are the best possible cars for any delivery purpose.

There are thousands of storekeepers and others who would be using these cars if they knew the facts.

A car which enables one man to do the work of three men and three horse-drawn vehicles, is bound to be an economy.

We want to tell you the facts—to show you the cars—to demonstrate what you can do with them. Send for our commercial booklet today.

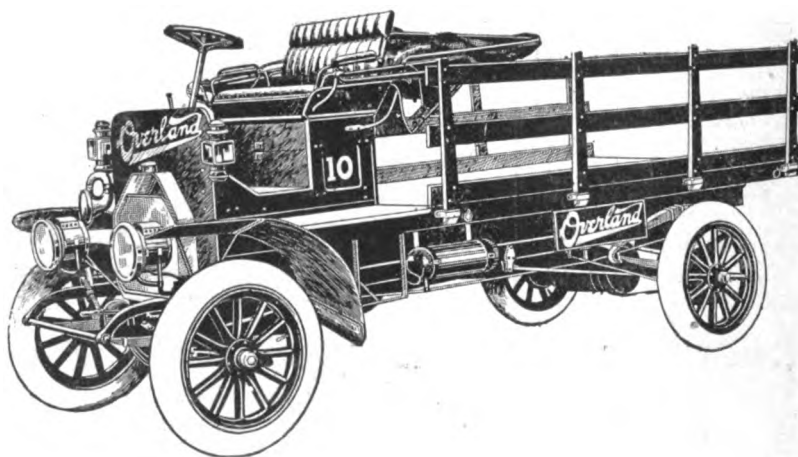
THE WILLYS-OVERLAND COMPANY, Toledo, Ohio, U. S. A.

OVERLAND ONE TON TRUCK

Horsepower 40
Wheelbase 120 inches

Maximum speed 40
miles per hour.

Price \$1500





GOODFELLOW PROVES A BAD ONE

Had a Great Tire Filling System, Also a Lot of "N. G." Checks—Now the Police Are After Him.

Charles W. Goodfellow, if that is his real name, has proved himself unworthy of it. Several weeks since Goodfellow opened an office at 2547 Atlantic avenue, Brooklyn, N. Y., and purposed to represent what he called the Twentieth Century Tire Filling System. He disappeared on Saturday last, and now the police, not to say a number of creditors, are after him.

The Twentieth Century System was as simple as rolling off a log. According to Goodfellow it consisted of semi-liquid air compressed into small cylinders designed to be stowed close to the engines of motor cars, the heat of which so expanded the compressed air that when a tire punctured all that was necessary was to connect one of the air cylinders with the valve of a tire when the tremendous pressure of air would keep the tire inflated, though the puncture was half the size of a house.

Goodfellow himself appeared to be what is vulgarly termed—and not inaptly in this case—a "hot-air artist." He had none of his Twentieth Century tire fillers for sale, but he expected to have some pretty stock certificates which would assure the fortunes of all those who became possessed of them. Meanwhile, and though the neighborhood is not a stock-buying locality, he induced furniture dealers to fit up his office, prevailed upon an awning maker and a cafe proprietor to cash his checks, and not only "hung up" his boarding mistress for \$21 for board, but borrowed \$2 from her. When the awning maker and the barkeeper next saw Goodfellow's checks they were marked "N. G." They promptly "sicked" the police onto the check-giver, and he was as promptly gathered in. His arrest, however, did not faze him. His gift of gab stood him in such good stead that he pre-

vailed on his creditors to believe that at any moment he would receive a Twentieth Century Tire Filling check for \$3,500, and thus be able to more than meet all claims against him. Accordingly he was released. The check apparently did not arrive. At any rate, Goodfellow is missing, and a warrant has been issued for his arrest.

Hart-Kraft Goes Into Receiver's Hands.

Donald H. Yost, an attorney who at one time had an interest in the company, was appointed receiver for the Hart-Kraft Motor Co., of York, Pa., on Saturday last, 4th inst. It was not generally known that the company, of which L. H. Hartman is president, was in difficulties, and for that reason the receivership is in the nature of a surprise. It is explained that although there is no lack of orders in hand, the tightness of the money market and immediately pressing demands forced the failure. It is expected that the receiver will finish the work on hand, and that the company will be reorganized on a firmer foundation. It was organized in February, 1907, with capital of \$115,000, and has operated a considerable plant in York, producing first light trucks and late last year a three-ton vehicle which markedly showed the results of experience.

Great Garage Scheme Changes Its Name.

The Buick Automobile Supply & Garage Co., which is a Maine corporation, although its principal office, if not its only one, is located in Saginaw, Mich., has changed its name to the National Garage System, Inc., and filed the necessary certificate with the Maine authorities. The Buick company was organized to dot the countryside with garages where its "members" might obtain repairs and supplies at "trade prices," and thus render local dealers practically unnecessary, but before it could open even one garage, it was necessary to sell stock, and the selling brought it some pain. Two of its canvassers brought proceedings to recover commissions alleged to be due and unpaid, and a sheriff attached the office fixtures in Saginaw.

A. L. A. M. PREPARES FOR REBIRTH

Its Proposed New License to Live Is Animatedly Discussed at Chicago Meeting—Contract that the Stockholders Will Sign.

Only a passably fair start was made toward the dissolution of the Association of Licensed Automobile Manufacturers, and the formation of a new corporation to take its place, at the meeting held in Chicago on Thursday last, 2nd inst., the news of which, published exclusively in the Motor World, caused the trade to sit up straight.

Thirty-nine members of the association were represented at the meeting. All of them previously had been provided with copies of the prospectus of the new corporation, and when they got together the meeting did not lack animation.

Although it was well understood that the new corporation will have no Selden patent around which to rally, and though it is stated that no patent of the sort is in sight, the prospectus, which in full is appended, made plain that the new organization purposes following closely the lines of the Association of Licensed Automobile Manufacturers, which, although not incorporated, bound its members together by contract. For while the successor to the A. L. A. M. will be a stockholding corporation, it will be knitted still more closely by a contract which, in its chief terms, is more or less identical with the one which held the A. L. A. M. together. It not only provides for the issuance of licenses and for a common defense in case of attack, but it binds the prospective members to the payment of 1-10 of 1 per cent. of the gross amount of their sales of automobiles, and also to render quarterly reports and to permit inspection of their books, exactly as was the case in the A. L. A. M. before the decision rendering the Selden patent invalid ended the contract.

It was expected, of course, that the Chi-

YEAR'S EXPORTS TOP \$13,000,000

Gain Equals 71 Per Cent.—Average Price of Cars Also Advances—Canada Accounts for More than \$5,000,000.

With shipments during the month of December attaining a value of \$1,046,955, the year 1910 closed with the automobile export record to its credit, the total being \$13,190,216, which represents a gain of 71 per cent. over \$7,786,617 exported during the 12 months of 1909.

For the 12 months the aggregate gain over the same period of 1909 amounted to \$5,403,679, a sum which exceeds the entire American automobile exports of 1908 by more than \$450,000. During the year 1910 there were exported specifically 8,440 cars, valued at \$11,210,295, as against 4,686, valued at \$6,889,031 in 1909, a gain of 65 per cent., while parts values improved to the tune of \$1,082,415, an increase of 120 per cent. over the preceding year. With the exception of a small loss in France, each of the 12 geographical divisions had a share in the recorded gains. The greatest actual gain, as in the preceding year, is shown by British North America, which increased its purchases from \$2,437,042 to \$5,021,043, or over 110 per cent.

Leading all divisions by a margin of over 80 per cent., Canada heads the list with \$5,021,043; Great Britain is second, with \$2,755,592; Other Europe third, with \$764,463; France fourth, with \$753,204, and British Oceania fifth, with \$748,933. Mexico, Other Asia and Oceania, South America and the West Indies follow in the order named.

The average value per car rose from \$1,099 to \$1,149, or exactly \$50 per car.

During the month of December alone there were exported 757 cars, valued at \$870,390, as compared with 458 cars, valued at \$503,431, during the corresponding month in 1909. The value of parts sent abroad during the last month of 1910 reached \$175,565, a gain of over 82 per cent. over the \$96,604 worth exported in December, 1909. The report in detail:

	—December—		— 12 Months Ending December —	
	1909	1910	1908	1909
Automobiles and parts of—				
Automobiles	\$503,431	\$870,390	\$4,346,293	\$6,889,031
Parts of (not including tires) ..	96,604	175,565	602,301	897,586
Exported to—				
United Kingdom	155,446	116,288	1,728,704	2,059,219
France	28,365	33,677	560,449	846,136
Germany	8,992	1,625	158,979	181,087
Italy	498	12,635	248,519	224,068
Other Europe	23,110	19,918	217,172	335,675
Canada	174,795	339,945	1,115,540	2,437,042
Mexico	44,001	52,323	312,603	494,238
West Indies and Bermuda	46,490	58,873	198,078	337,414
South America	28,787	73,567	126,285	240,453
British Oceania	56,415	200,536	87,543	303,452
Other Asia and Oceania	19,242	114,592	129,968	191,448
Other countries	13,894	21,976	64,754	136,394
Total	\$600,035	\$1,045,955	\$4,948,594	\$7,786,617
				\$13,190,296

(Continued on page 639)

Tire Exports Attaining Large Proportions.

Reflecting the remarkable expansion of exports of American automobiles, the shipments of rubber tires for automobile, carriage and cycle uses, during December, 1910, show substantial gains. During this month \$191,970 worth of tires were exported, of which \$144,645 represented automobile tires. As the figures recording tire exports were not given separately compiled previous to July 1, 1910, only the totals for the six months beginning July 1, and ending December 31, are available. These show the total tire exports during this period to have been \$1,115,725, of which sum \$839,930 represents the value of automobile tires.

Spring Repairer Obtains an Injunction.

Judge Ward, in the United States Circuit Court, in New York City, last week made permanent an injunction obtained by the Auto Spring Repairer Co. and William Tinkney against the Motor Car Equipment Co., of New York, restraining the latter from selling or in any way infringing or having to do with the Stranstrane emergency spring repairer, covered by patent No. 902,250, issued October 27, 1908. The defendants interposed no objections, and in view thereof the complainants waived their rights to demand an accounting and all claims for damages.

New York Top Maker in Trouble.

Alexander Goldner, who did business as the Broadway Auto Top & Body Co., at 136 West 54th street, New York, was petitioned into involuntary bankruptcy on Monday, last, 6th inst., by Alfred R. Kendrick and Reuben M. Lusch. It is alleged while insolvent on October 8, he transferred the goods and chattels of the business to Samuel Friedman by a chattel mortgage.

Dunn Again Goes to Pacific Coast.

H. T. Dunn, president of the Fisk Rubber Co., Chicopee Falls, Mass., has started another of his periodical trips to the Pacific Coast. En route he will visit the company's various branches, returning about March 15th.

Chicago meeting would result in a general discussion of the proposed terms, and, according to some of those present, the discussion was general enough and warm enough to meet any reasonable anticipation. Objections were registered to the formation of any corporation based on a patent, or patents, and to a board of directors of but seven members, and there was distinct opinion expressed that the new company shall be an open and not a close corporation, which is to say, that the directors shall not be beyond the control of the stockholders, as outlined in the prospectus, and that the stockholders shall have some voice in the selection of a general manager and in the fixing of his compensation. It was also pointed out that no provision had been made permitting resignations, but the chief discussion centered on the proposal that the company's chief source of revenue shall be derived from 1-10 of 1 per cent. of the gross sales of its stockholders. The idea of this provision is, of course, that the large producer and the small one shall pay in proportion to their outputs, but there are those who advocated that a maximum of \$5,000 or \$10,000 per year be set. As no vote was taken, the question is still an open one.

The committee, which had formulated the prospectus and which consists of Messrs. Hanch, Chalmers, Joy, Clifton, Briscoe and Henderson, made plain that it had no desire to force its ideas on the meeting which had been called chiefly for the purpose of securing the general expression of opinion which had been brought about. The committee was conciliatory to a degree, and there is no doubt that when the revised prospectus is submitted at the next meeting, which is to be held in New York within a few weeks, it will show the result of the Chicago discussion.

Apart from this discussion the Chicago meeting had directly to do with several A. L. A. M. matters. Among other things it was suggested that the initiation fee of \$2,500, which all of the members had paid, be returned to them, and it was agreed that this be done with the important proviso, however, that such action be subject to the advice of counsel.

Perhaps the most unexpected information brought out at the meeting, however, was the news that despite the defeat of the Selden patent and the stoppage of royalty, the A. L. A. M., under its contract, must pay the Columbia Motor Car Co., which owns the patent, the sum of \$150,000, which is the maximum annual payment stipulated by the contract. As the association's year began October 1, and the Selden patent was not invalidated until January, the entire amount must be paid.

The members represented at the meeting were as follows: American Locomotive Co., James Joyce; American Motor Car Co., J. I. Handley; Apperson Bros. Auto

IMPORTS DROP NEARLY A MILLION

France and Italy Continue to Lose Ground in America—Fewer Cars but of Greater Average Value.

While the exports of American automobiles to Europe have been bounding upward, the imports of foreign machines to this country have been falling off at an equally amazing rate. The figures for the year ending with December, 1910, show that but 1,024 cars, valued at \$2,080,555, were brought over from Europe, as against 1,645 cars, valued at \$3,071,002, in 1909, representing a loss of 33 per cent. In respect to parts also there was a marked decline, the figures for 1910 showing imports valued at \$656,653, as against \$865,506 during the same period of the preceding year, when heavy importations of taxicabs served to "keep up appearances."

The average value of the cars imported in 1909 was \$1,867; in 1910 it was 2,032. The total loss was sustained by France and Italy. The former's American sales fell off to the extent of 372 cars, valued at \$604,544, while Italy's loss was 249 cars, valued at \$376,976. Germany, which during the 12 months of 1909 sent 127 cars, valued at \$321,033, to this country, remained practically stationary, its quota for 1910 including 129 cars, valued at \$314,577. Great Britain exported 94 cars, valued at \$212,969, during 1910, as compared with 101 cars valued at \$233,383, in 1909. The only gains in imports were recorded in the division Other Countries, which sent 76 cars, valued at \$174,175, to this country, as against 71 cars, valued at \$156,232, in 1909, and in great measure is represented by trucks imported from Switzerland. Arranged in their order of importance to the American automobilist, the list of importers is headed by France with \$1,066,356; Germany is second with \$314,577; Italy third, with \$312,478, and Great Britain fourth, with \$212,969.

The figures for the month of December, 1910, show a falling off in the imports from four of the divisions, the only exception being Great Britain, which increased its quota from eight cars, valued at \$13,181, during December, 1909, to 15 cars, valued at \$25,501, during the same period of 1910. The report in detail is as follows:

COUNTRIES— Automobiles and parts of:	December				Twelve Months Ending December							
	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.	Quantities.	Values.
Automobiles	149	\$292,545	83	\$178,900	1,347	\$2,558,819	1,645	\$3,071,002	1,024	\$2,080,555		
Imported from—												
United Kingdom	8	13,181	15	25,501	77	167,412	101	233,383	94	212,969		
France	65	132,543	46	101,688	947	1,708,474	928	1,670,900	556	1,066,356		
Germany	24	48,984	10	25,401	32	99,394	127	321,033	129	314,577		
Italy	44	78,820	8	14,121	271	524,653	418	689,454	169	312,478		
Other countries	8	19,017	4	12,189	20	58,886	71	156,232	76	174,175		
Parts (not including tires)	....	62,811	....	25,830	....	650,563	....	865,506	....	656,653		
Total.....	....	\$355,356	....	\$204,730	....	\$3,209,382	....	\$3,936,508	....	\$2,737,208		

Busch Heads New Diesel Engine Company.

Although but little has been heard of it recently, the Diesel engine, which at one time was expected to revolutionize the entire gas engine industry, has bobbed up again in St. Louis, where the Busch-Sulzer Brothers-Diesel Engine Co. just has been formed, and of which Adolphus Busch, the big brewer, who for some years has been interested in the building of the Diesel engine in America, is president. The new organization, which has been formed to build engines under the Diesel patents, is capitalized at \$2,100,000, and is represented as contemplating the erection of a \$1,000,000 plant. The Diesel engine is of the fuel-injection, constant-pressure type, working with extremely high compression. Owing to the high temperatures developed it is competent to run on heavy oils as well as ordinary fuels, while the extremely high thermal efficiencies it is capable of developing render it particularly suitable for large installations. Although of German origin and widely used abroad, the system, which was patented in this country in 1900 and again in 1908, has not come into much use here, former efforts to exploit it not having met with much success.

Percy Ford Fails to Weather Storm.

Despite the extension granted by its creditors, the Percy Ford Co., the Boston (Mass.) jobbing house, was unable to weather its difficulties. On Tuesday last, 7th inst., it made an assignment for the benefit of its creditors, Ford himself also making a personal assignment of all his property. The company had book liabilities of \$79,319, plus capital and surplus of \$35,420, and nominal assets equal to the same total.

Pendletons Form a Truck Company.

The P. H. P. Motor Truck Co. has been formed in Westfield, Mass., to manufacture a light delivery truck, of 20 horsepower, which has been designed by E. R. Pendleton, of A. V. Pendleton & Sons, of that city. Temporarily, at least, the business will be carried on at the Pendleton garage.

Making More Room for Cutting Cars.

The Clark-Carter Automobile Co., makers of the Cutting car, has commenced the construction of a three-story addition to its plant at Jackson, Mich. It will be 50 x 160 feet, of mill construction.

BRANCH MANAGER GETS HIS SALARY

Had to Sue for It, and the Suit Brought Out Some Interesting Sidelights—Manager's Reputation Cleared.

While the suit of George W. Floyd vs. Joseph S. Coates and Arthur R. Coates, constituting the Coates-Goshen Automobile Co., of Goshen, N. Y., which was decided last week, outwardly did not differ from hundreds of similar cases aired in the magistrates' courts of New York City, it presented a number of interesting particulars, which tend to illustrate some little known features of the automobile business, and to show the difficulties and troubles besetting a manufacturer trying to obtain "metropolitan" recognition. It also drew attention on account of the prominence in the automobile world of some of the witnesses that were called, among whom were W. C. Durant, of the General Motors Co., and M. C. Schweinert, of A. Schrader's Son, Inc., New York, and a number of society people who had bought or who had intended to buy cars from the New York branch of the Coates-Goshen company. The case was to have come up for decision before Justice Thomas F. Noonan, but was turned over by the latter to a jury sitting in the Municipal Court for the Third District, at 314 West 54th street.

George W. Floyd on January 1, 1910, had entered into a six months' contract with the Coates-Goshen company to manage its New York branch at a salary of \$500, which seems generous, but out of that sum he was required to pay the rent for the salesroom, the office expenses and advertising. On April 15 the company discharged Floyd without notice, and the latter promptly sued it for \$500 salary due. The Coates-Goshen company filed a counterclaim of \$500 for moneys said to be due it from Floyd, in which claim Floyd was alleged to have committed misappropriations of funds, collections of moneys not belonging to him, etc., which allegations the company, however, was unable to substantiate when the judge ordered it to furnish detailed charges. After hearing the evidence which brought out that the salesroom had been moved six times in six months, and the testimony of the witnesses, the jury found in Floyd's favor, and award-

ed him the sum of \$481.67, salary and costs.

The correspondence submitted at the trial showed that the company during January, 1910, had made heroic efforts to obtain a Selden license. One of the letters in particular charged the recipient with the duty of "seeing" the president of the Automobile Club of America and trying to use the fact of the Coates-Goshen plant's being located on the Erie railroad, and the president of the Automobile Club of America being very close to the management of the Erie railroad, in obtaining the coveted license. Other letters dealt with the matter of paying commissions to "someone who knew a fellow, who had a friend who thought of buying an automobile," said last-named friend finally having bought one of the cars made by the defendant company.

Chain Tire Grip Gets Another Airing.

Whether the United States Court of Appeals for the Seventh District has been convinced that it erred in declaring invalid the Parsons patent, No. 723,299, covering the Weed Chain Tire Grip, shortly will be known. On Thursday last, 2nd inst., the court, sitting in Chicago, listened to the argument of counsel for the Weed Chain Tire Grip Co., who sought to point wherein it had erred, but after listening for two hours to such oral argument, the court took the matter under advisement.

Nominally the case in issue was the appeal of the Pitts Chain Grip Co., of Chicago, from the preliminary injunction obtained by the Weed company, but although the Pitts attorneys were present and spoke for about 10 minutes, the court informed them that as it already had declared the Parsons patent invalid, there was no need to hear the Pitts side of the case, unless the court changed its mind and granted a re-argument, in which event the Pitts counsel would be notified. The Weed attorneys had applied for an oral rehearing of their side against the Excelsior Supply Co., which resulted in the invalidating of the Parsons patent, and, although the court had not granted it, the Weed counsel, Messrs. Edward Rector, of Chicago, and Frederick Duncan, of New York, were able, nevertheless, to use the Pitts case as a means of presenting any argument they might bring to bear, even if their plea for a rehearing of the Excelsior case is refused.

Milwaukeeans Buy Rider-Lewis Plant.

The plant of the Rider-Lewis Motor Car Co., of Anderson, Ind., which has been in the hands of a receiver for several months, has been purchased by Lester C. Manson, of Milwaukee, who is an attorney representing Milwaukee capital. He paid \$38,000 for the property, which will net the creditors about 12½ cents on the \$1. It is stated that the new owners will immediately put \$50,000 into the business and begin operations on an aggressive scale.

THE WEEK'S INCORPORATIONS.

Madison, Wis.—Diamond Rubber Co. (the New York corporation) admitted to do business in Wisconsin with \$1,000 capital.

Muskegon Mich.—Wright Cooler & Hood Mfg. Co., under Michigan laws, with \$10,000 capital; to manufacture radiators and hoods.

Dayton, Ohio—Barnard Carbureter Co., under Ohio laws, with \$100,000 capital; to manufacture carbureters. Corporators—Davis Barnard and others.

Hartford, Wis.—Northwest Kissel Kar Co., under Wisconsin laws, with \$20,000 capital. Corporators—George A. Kissel, Otto P. Kissel, Paul A. Rix.

Conneaut, Ohio—Conneaut Auto Shop Co., under Ohio laws, with \$10,000 capital; to maintain a repair shop and garage. Corporators—E. Best and others.

Detroit, Mich.—Hupp Sales Co., under Michigan laws, with \$100,000 capital; to deal in automobiles. Corporators—R. C. and L. G. Hupp, B. Q. Hazelwood.

Council Bluffs, Ia.—Van Brunt Automobile Co., under Iowa laws, with \$25,000 capital; to deal in automobiles. Corporators—Henry A., Harry L. and George W. Van Brunt.

Kansas City, Mo.—Albertson Motor Co., under Missouri laws, with \$10,000 capital; to deal in motor vehicles. Corporators—H. F. Hopp, Hazel H. Albertson, E. S. Albertson.

Kansas City, Mo.—Brush Kansas City Motor Co., under Missouri laws, with \$2,000 capital; to deal in automobiles. Corporators—George H. Swope, W. S. Hathaway, C. W. Jones.

Chicago, Ill.—Great Western Transportation Co., under Illinois laws, with \$100,000 capital; to deal in motor trucks. Corporators—Samuel B. Geiger, Henry M. Wilcox, Warren M. Troup.

Birmingham, Ala.—Taxicab & Touring Co., under Alabama laws, with \$2,000 capital, all paid in; to do general taxicab business. Corporators—E. R. Minheunett, C. C. Jones, G. H. McLin.

Logansport, Ind.—Smith-Kilbourne Co., under Indiana laws, with \$10,000 capital; to deal in automobiles and other vehicles. Corporators—O. W. Smith, E. H. Kilbourne, W. B. Smith.

Indianapolis, Ind.—American Motors Co., under Indiana laws, with \$1,050,000 capital; to manufacture and deal in automobiles. Corporators—J. J. Handley, A. D. Ogborn, J. E. Kepperley.

Jefferson City, Mo.—Jefferson City Taxicab Co., under Missouri laws with \$3,000 capital; to maintain a garage and livery service. Corporators—E. S. Austin, Julius Tanner, Louis Tanner.

Indianapolis, Ind.—Meridian Auto Co., under Indiana laws, with \$20,000 capital; to

deal in automobiles. Corporators—W. B. Cooley, B. E. Parrott, W. F. Kuhn, W. C. Johnson, H. C. Schwartz.

Cleveland, Ohio.—Anthracite Auto Co., under Ohio laws, with \$1,000 capital; to deal in automobiles. Corporators—Sidney Seidman, Henry White, James A. Joyce, B. Rippner, George S. Queen.

Jackson, Mich.—Standard Electric Car Co., under Michigan laws, with \$100,000 capital; to manufacture electric automobiles. Corporators—Charles G. McCutcheon, C. F. Koueger, Frank W. Gay.

St. Louis, Mo.—General Novelty Mfg. Co., under Missouri laws, with \$15,000 capital; to manufacture automobile parts and accessories. Corporators—Frank Bishop, D. H. C. O'Neill, H. C. Barker.

Collinsville, Ill.—Yates-Brooks Automobile Co., under Illinois laws, with \$5,000 capital; to deal in automobiles and accessories. Corporators—Elgin S. Brooks, Everett W. Brooks, G. Y. Yates.

Chicago, Ill.—Halladay Garage Co., under Illinois laws with \$2,500 capital; to deal in automobiles and general storage business. Corporators—Alfred Livingston, Louis Cohen, William J. Andrews.

Minneapolis, Minn.—Segerstrom Vulcanizer Co., under Minnesota laws, with \$50,000 capital; to manufacture the Segerstrom vulcanizer. Corporators—F. W. Segerstrom, E. C. Garrigues, A. F. Smith.

Colorado Springs, Colo.—Marksheffel Motor Co., under Colorado laws, with \$20,000 capital; to do general automobile business. Corporators—A. W. Marksheffel, Mrs. A. W. Marksheffel, C. B. Adams.

Chicago, Ill.—Adlake Automobile Livery Co., under Illinois laws, with \$12,000 capital; to do general automobile and livery business. Corporators—J. Scott Matthews, William J. Matthews, Florence J. Bach.

Increases and Decreases of Capital.

Detroit, Mich.—Gies Gear Co., from \$75,000 to \$50,000.

Detroit, Mich.—Auto Parts Mfg. Co., from \$100,000 to \$250,000.

Milwaukee, Wis.—Milwaukee Tire Repair Co., from \$8,000 to \$12,000.

Hastings, Mich.—Hastings Motor Shaft Co., from \$30,000 to \$50,000.

St. Joseph, Mo.—Robinson Auto Supply Co., from \$10,000 to \$15,000.

St. Louis, Mo.—Pope-Hartford Motor Car Co., from \$50,000 to \$150,000.

Youngstown, Ohio—Republic Rubber Co., from \$2,500,000 to \$4,000,000.

Recent Losses by Fire.

Hershey, Pa.—Hershey Co., garage and stable burned; total loss, \$100,000.

Chicago, Ill.—Coe Auto Service Co., 1426 Michigan avenue, garage and 15 cars destroyed; loss, \$30,000. Standard Automobile Supply Co., same address; loss, \$15,000.

IN THE RETAIL WORLD.

K. L. Sharp has opened a garage in Mauston, Wis.

S. E. Huff has established a garage in Alton, Ia.

D. Laudon has opened a garage in Silver City, Ia.

On March 1, George McAtee will open a garage in Webster City, Ia.

Under the style Fisk & Lauck, a new firm has entered business in Spencer, Ia.

Hurd & Poole is the style of a new firm which just has inaugurated a garage business in Spencer, Ia.

Johnson & Hewing have opened up at 17th street and Grand avenue, Des Moines, Ia. They handle the Packard line.

The Ideal Auto Co., of St. Paul, Minn., has been formed with J. N. Knutson as manager and headquarters at 518 St. Peter street. Cole "30" cars will be featured.

Ritchie & Heriot, Pacific Coast agents for the Armor Plate Tire Protector, have opened a branch house in Stockton, Cal. Harry Ritchie will be in charge of it.

The Empire Garage, located on J street, Sacramento, Cal., has been sold to Al. Frazier and T. Ziegler. The new owners have changed the name to Superior Garage.

The Motorette Co. of New York has filed papers of incorporation, and will open a salesroom at 1989 Broadway, where the Kelsey motorette will be shown. C. H. Adler will be in charge.

Charles D. Herschberger and Arthur A. Casper have formed a partnership and opened a salesroom at 54 North Pennsylvania avenue, Wilkes-Barre, Pa. They will handle the Winton and Everitt cars.

The Bryant Motor Co. has removed to new salesrooms in the Ehret building at Columbus Circle, New York, where Kline cars will be handled. The company formerly was located at 41-43 West 63d street.

C. J. Downs, formerly connected with the Means Automobile Co., of Des Moines, Ia., has "opened up" on his own account at 309 East Walnut street, in the same city. He will handle the Krit line of cars.

Maxwell & Gore have erected a new garage in Lawrenceville, Ill., to accommodate their growing business. The new structure is 110 x 140 feet, two stories high and will cost when completed over \$15,000.

C. H. Guthard, formerly the Regal agent at Saline, Mich., has purchased the stock of the Denver Regal Auto Co., and will continue to sell Regal cars in the Colorado city. His salesrooms are at 1236 Broadway.

J. F. Miller, J. W. Moomau and Clyde Miller have opened a salesroom on Race street, Urbana, Ill., which has 5,500 feet of floor space. They will handle Studebaker, E-M-F and Flanders cars, and carry a full line of supplies.

Abner Wilson and John Peoples have formed a partnership under the style of Wilson & Peoples, and opened a garage and repair shop on North Broad street, Trenton, N. J. Wilson last year was the agent for Mercer cars.

With a capital of \$10,000, the Keystone Auto & Supply Co. has been formed in Des Moines, Ia., with headquarters at 909 Locust street. John H. Gibson is president; Verne W. Reynolds, secretary, and John B. Gibson, treasurer of the concern.

At a cost of \$20,000 a new garage is being erected at 706-708 North Broadway, Oklahoma City, by Francis & Hackney, state agents for the Mitchell line. The building will be three stories high, 50 x 120 feet and practically fireproof.

Alco cars hereafter will be handled in Pittsburg by a direct factory branch which just has been opened in the Smoky City under the style the Alco Pittsburg Sales Co. It is located at the corner of Ellsworth and College avenues.

The Bartholomew Co., of Peoria, Ill., has established a branch at 638 North Broad street, Philadelphia, Pa. It will be in charge of O. Y. Bartholomew, vice-president of the company, and will deal in both Glide cars and Avery trucks.

William Burton, formerly town treasurer of Olneyville, R. I., and George L. Buckley, formerly with the Hughes Automobile Co., have formed a partnership and opened a salesroom and garage at 858 North Main street, in that Rhode Island town.

Incorporated under the laws of the State of Pennsylvania, the Motorette Co. of Philadelphia has opened a salesroom at 234 North Broad street. It will be in charge of Henry H. Horrocks, and will handle the Kelsey motorette exclusively.

Two new salesrooms are to be opened at Reading, Pa. The Dietrich Motor Co., of Allentown, is building a large garage and salesroom at 145 South Eighth street, while the General Auto Supply Co. soon will open a supply store at 15 South Fifth street.

The Motor Transfer Co., of Fort Wayne, Ind., has purchased the entire stock and business of the Fort Wayne Transfer Co. for \$20,000, and will merge it with its own business. This gives the Motor Transfer Co. complete control of the transfer business in the Indiana city.

In order to obtain additional capital with which to carry on its business, the Michigan Automobile Co., of Kalamazoo, Mich., has filed a trust mortgage of \$20,000 on its plant, which has been taken up by Victor L. Palmer. The company intends to issue 400 6 per cent. bonds of \$500 each.

Under the style of the I. X. L. Motor Co., a new concern has opened a salesroom and garage at 711-713 West State street, Rockford, Ill., where Reo cars will

be displayed. The company is composed of Fred K. Carrico, E. L. Warren, F. C. Eddy, W. A. Wilson and F. Flanagan.

An involuntary petition in bankruptcy has been filed against the Consolidated Motor Car Co., of Birmingham, Ala., by the Gulf Refining Co. (\$985.83), the Southern Wesco Supply Co. (\$64.43) and the Indian Refining Co. (\$9.60). After hearing argument in the case, Judge T. G. Jones appointed A. S. Clyce, of Birmingham, receiver.

C. D. Norris, of South Bend, Ind.; J. W. Lewis, of Beatrice, Neb., and L. W. Mason, of Louisville, Ky., have formed the American Automobile Sales Co., of Sioux City, Ia., and opened salesrooms in that city. They will represent the American Automobile Mfg. Co., of New Albany, Ind., which recently took over the Jonz plant in Beatrice, Neb., and removed it to the Indiana city.

Changes Among Prominent Tradesmen.

J. D. Porter has been appointed southwestern distributor of Garford cars. He probably will make his headquarters in Kansas City or Omaha.

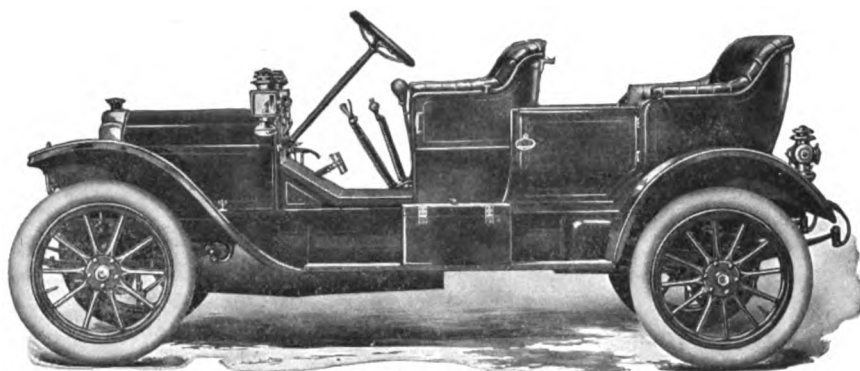
Gleason Murphy has been named as assistant to the new president of the General Motors Co., Thomas Neal. Previously Murphy was secretary of the Murphy Chair Co., of Detroit.

H. H. Pinney has been appointed factory manager of the Chalmers Motor Co., of Detroit, Mich. To accept the position he resigned the superintendency of the Union Metallic Cartridge Co., of Bridgeport, Conn., where he made a big reputation as a factory organizer and producer.

Edwin B. Knowles, president and general manager of the Royal Equipment Co., of Bridgeport, Conn., has resigned those offices and has been succeeded by Sumner Simpson, formerly of the Union Metallic Cartridge Co., of that city. Knowles, it is stated, will form a new company for the manufacture of several automobile specialties.

Death Claims the Senior Stearns.

On Monday, January 30, F. M. Stearns, father of Frank B. Stearns, president of the F. B. Stearns Co., of Cleveland, Ohio., and director of that company, passed away. Mr. Stearns formerly was president of the Stearns company, but of late years has not been actively engaged with its affairs, although he still retained his interest. Mr. Stearns was the organizer of the Berea Stone Co., now the Cleveland Stone Co., the largest corporation of its kind in the world. He owned extensive interests in North Carolina, and of late years had devoted considerable of his time to philanthropic pursuits. He was founder of the Central Industrial Institute, at Columbus, N. C., and was interested in a number of enterprises in that city.



The Long-Stroke Engine—An Explanation

THE long-stroke engine must economize in the use of gasoline, and we will try to make it plain—very plain—just why. You know whether you would prefer to fill a gallon crock or a quart measure (if you had to pay for it). The gallon crock is the large bore, short-stroke motor—the tall quart measure represents the medium bore, with the long stroke—both must be filled with gasoline in automobile work.

Of course the gallon crock has a greater capacity than the quart measure, but the greater capacity does not produce proportionately greater power. For example, you know that your revolver will not shoot so far nor penetrate so deeply as your rifle, using the same cartridge. In firearms we call it the length of barrel, and explain it by saying we get the benefit of the whole expansion of the gas. In automobiles it is the same thing, but we call it the length of stroke. In a rifle we get results because there is but one direction for the gas to expand—the length of the barrel—in automobiles, if there is but one direction in which to expand, and that dimension is sufficiently long, we get the full power.

White Motors Economical

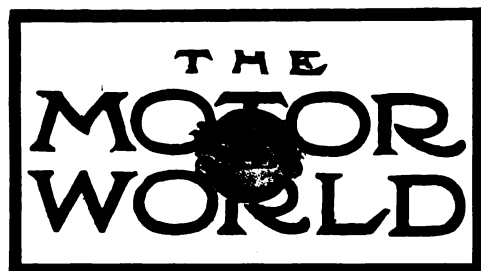
The above tells the whole story of the remarkable performance of White gasoline cars and trucks, from the standpoint both of power and fuel consumption.

The four cylinders of the White motor are more nearly rifle-barrels than any others, consequently less of the explosive medium is required to produce the high-power rifle results. One other advantage follows: because White motors are not large and unwieldy, White cars are of moderate size and weight, consequently get over the road more easily and are easier upon the tires and other items of maintenance.

Catalogues, testimonials and other literature
gladly sent upon request.


The White Company

830 East 79th Street, Cleveland



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NEW YORK, FEBRUARY 9, 1911.

"We are becoming more and more impressed with the Motor World and must say it is making great strides in a going direction."—E. W. Arbogast, general manager DeTamble Motors Co., Anderson, Ind.

Let the Automobile Bear All Burdens!

Rushing to the aid of a perplexed Democratic governor, who fears there is not much left to tax, the Republican New York Evening Mail editorially suggests that there is "one source of taxation which ought to be dug deeper—the tax on motor cars."

As it cost \$1,800,000 to maintain the roads of New York State last year and is likely to cost \$1,500,000, the Evening Mail "submits that every cent of it ought to be defrayed by a tax on automobiles, and that the tax ought to be heavy enough also to take care, directly or indirectly, of the bonds issued for building state roads." Why? Because the Mail believes "it would be placing the burden where it belongs and

on shoulders best able to bear it; it would compare exactly with the justice of the Mikado, and 'make the punishment fit the crime'—require the automobile to repair its own mischief."

The Evening Mail is the publication which periodically and in spread-eagle fashion prints tables showing how much more "automobile money" it receives—how many more lines of automobile advertising it carries—than its competitors are able to secure and in thus urging the state to "dig deeper" probably it speaks by the book and seeks to prove itself worthy of the automobile patronage which has been accorded it. But why the Mail should stop at advocating that automobiles be made bear the entire cost of highway upkeep is not easily comprehensible. As mere possession of a car of any sort, even of a high-wheel motor buggy, is a sign of unlimited wealth and absolutely proves that the owner is "rotten with money," to employ a descriptive vulgarity, why not compel him to share more largely the other burdens of state?

True, in addition to the round sum he pays for the mere privilege of owning a car, he is bearing a share of the \$50,000,000 voted for road improvement and of the other \$50,000,000 that provides jobs for politicians through the medium of the barge canal. But why should not the automobilist pay a larger share of such expenses? Why should not he pay all of them? For whenever he uses the roads, does he not use water also? Make him pay for the barge canal! Make him pay for everything! He's fit only for plucking, anyway. His is the only vehicle that ever destroyed a highway. There were no automobiles in existence twenty years ago, but it was the spirit of the automobile that ruined the roads of that period. The Evening Mail knows that and should have remarked it. Make the automobilist pay "back dues!" Soak it to him! He is made of money.

Development of Electric Lighting.

When a thing is so logical and evidently useful as to provoke the exclamation, "Why didn't somebody think of that before?" its chances of success, if it happens to be a marketable invention, process or system, are reasonably certain. Nothing, for instance, could be more obvious than the utility and possibility of electric automobile lighting, nor of a combined genera-

tor and battery system for feeding the lights, nor, for that matter, of a complete electrical installation to take care of ignition and lighting simultaneously. And now that such systems are on the market and in practical shape, the question very naturally arises as to why they should be considered novel at this time, why their advent has been so long delayed.

Automobile history, however, shows that combined ignition and lighting systems by no means are as novel as many persons now believe them to be. A matter of eight years ago not one but several systems of the sort were being built and used, while others were being worked out by inventors. All the advantages of such a system were thoroughly appreciated at that time, and many of the obstacles that the problem of its design involves likewise were comprehended. The simple reason for its discontinuance was that it was ahead of its time; it was too expensive and too uncertain for the manufacturer to retain as regular equipment, and too elaborate to be successful as an extra accessory.

The situation at present is entirely different and altogether ripe for such an innovation. That no less than a dozen manufacturers are now engaged in producing such systems, most of them having disclosed their products only within a few weeks, indicates a unanimity of opinion in this connection that is as remarkable as it is significant. The market has reached a point where devices that promise really useful and serviceable results are in demand; motorists as a class are in a mood to equip their cars with conveniences and luxuries to a greater extent than before; automobile manufacturers are forced by competition to be extremely liberal to their customers both in standard and optional equipment. Most important of all, there is a sound basis for the introduction of the complete electrical outfit, whether considered as a new departure or as a natural development of the ignition system. That alone should be sufficient to ensure its permanence.

But while the ultimate adoption of systems of this nature seems assured, there is one point that should be urged upon the consideration of all who are now producing or who contemplate producing them. That is that the electrical capacity of each outfit be made sufficient for all probable needs. So great is the fascination of pushing a little button and getting instantaneous

COMING EVENTS

and certain results, that electrical devices for automobile use are sure to multiply as fast as the installation of generator systems of proper capacity will warrant. Already there are, in addition to the running lights, dash and pillar lamps, number lights, meter lights, trouble lights, electric horns and cigar lighters, dome lights, for cape tops as well as enclosed cars, reading lights, annunciators and heaters. A complete electrical equipment would require a greater line capacity than most of the present systems are capable of taking care of, but anticipating the growing wants of the owner, it is possible to add to the capacity of the generator without materially adding to its weight, cost or power requirement. And the producer of such systems who builds with an eye to future wants in this direction is likely to be correspondingly rewarded.

Nothing better could illustrate the viciousness of the "To the victor belongs the spoils" policy that actuates the average professional politician than the effort now being made to wipe out the New York State Highway Commission and turn over its important and costly work to the hungry politicians who were swept into favor at the last election. The commissioners were appointed by former Governor Hughes, whose uprightness and disregard for charley-murphys and other professional pap seekers and pap dispensers endeared him to the public. The character of the commissioners is in keeping with the governor's and the manner in which they have performed the service required of them and the promise that it holds constitute the best reason why they should not be disturbed. Governor Dix already has found a \$15,000 a year job for his business partner, but the motorists of New York state are sufficiently interested to insist that the matter of road improvement shall not be treated as a part of the spoils system. It directly affects too many people and too many millions are at stake to permit of it.

The mysterious "Chauffeurs' Federation of America" (of Utica, N. Y.) has found an assemblyman willing to introduce its bill in the New York legislature, which would define as chauffeurs all owners who drive their own cars. It is a mischievous measure and those in power should lose no time in heading it off.

February 6-9, Grand Forks, N. D.—Grand Forks Automobile Dealers' Association's show in Auditorium.

February 6-11, Chicago, Ill.—National Association of Automobile Manufacturers' tenth national show in Coliseum. Pleasure and commercial cars, motorcycles and accessories.

February 6-11, Buffalo, N. Y.—Buffalo Automobile Trade Association's ninth annual show in Broadway Arsenal.

February 8-12, Davenport, Ia.—Davenport automobile dealers' show at Commercial Club.

February 11-18, Mexico City, Mexico—First annual show.

February 13-18, St. Louis, Mo.—Annual show in Coliseum.

February 13-18, Washington, D. C.—Second annual show in Convention hall.

February 13-18, Winnipeg, Canada.—Winnipeg Motor Trades Association's show.

February 13-18, Kansas City, Mo.—Motor Car Trade Association's show in Convention hall.

February 13-28, Dayton, Ohio—Second annual show in Memorial building.

February 14-18, Memphis, Tenn.—Memphis automobile dealers' first annual show in the Auditorium.

February 15-18, Grand Rapids, Mich.—Grand Rapids Automobile Dealers' Association's show.

February 16-18, Fort Wayne, Ind.—Fort Wayne Automobile Association's first annual show.

February 18-19, Oakland, Cal.—Racemeet on Oakland motordrome.

February 18-25, Binghamton, N. Y.—Annual show.

February 18-25, Minneapolis, Minn.—Minneapolis Automobile Show Association's annual show in National Guard Armory.

February 18-25, Newark, N. J.—New Jersey Automobile Exhibition Co.'s fourth annual show.

February 18-25, Brooklyn, N. Y.—First annual show of Brooklyn automobile dealers at 23d Regiment armory.

February 18-25, Cleveland, O.—Show in Central Armory.

February 18-25, Albany, N. Y.—Albany Automobile Dealers' second annual show in State Armory.

February 20-25, Portland, Me.—Sixth annual show in the Auditorium.

February 20-25, Cincinnati, O.—Cincinnati Automobile Dealers' Association's show in Music Hall.

February 20-25, Hartford, Conn.—Hartford Automobile Dealers' Association's fourth annual show in Foot Guard armory.

February 20-25, Omaha, Neb.—Third annual show of the Omaha Automobile Show Association in Auditorium.

February 21-25, Baltimore, Md.—Annual show in Fifth Regiment Armory.

February 22, San Francisco, Cal.—Panama-Pacific road races.

February 24-27, New Orleans, La.—First annual show of New Orleans Automobile Club at Fair Grounds.

February 24-25, Keene, N. H.—Consolidated Motorcyclists' third annual motor vehicle show.

February 25-27, New Orleans, La.—New Orleans Automobile Club's annual Mardi Gras racemeet on Fair Grounds track.

February 25-March 4, Toronto, Canada—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-11, San Francisco, Cal.—San Francisco Motor Club's show in Dreamland and Pavilion rinks.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building and Horticultural Hall.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

March 6-11, Houston, Tex.—Houston Automobile Dealers' Association's endurance run to San Antonio via Austin, and return.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

March 11-18, Cleveland, O.—Manufacturers and Dealers' Association's show in Central Armory.

March 14-18, Denver, Col.—Annual Show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 15-18, Louisville, Ky.—Louisville Automobile Dealers' Association's annual show in First Regiment Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

March 25-April 1, Pittsburg, Pa.—Pittsburg Automobile Dealers' Association's fifth annual show in Duquesne Garden.

March 27-30, Jacksonville, Fla.—Racemeet on Atlantic-Pablo Beach.

April 1-8, Montreal, Can.—Annual show in Coliseum.

The Menace of the Second-Hand Car

Its Full Meaning and the Necessity for Reckoning with it Pointed Out by a Sales Manager of Long Experience—"Trading" Not a Necessary Evil—Branch Houses Much to Blame—How Some Agents Deal with Used Cars.

Evidence is accumulating that, if not wholly awake, the trade is awakening to the real extent of the menacing influence of the used car, and wherever the dealer is given to serious thought and earnest figuring there is a growing disposition to handle it with padded gloves, when there is necessity for handling it at all, which necessity arises oftener than is good for individual comfort. Not a few of the manufacturers have been endeavoring to arouse their agents to the demands of the situation, the Association of Licensed Automobile Manufacturers itself deeming it of such moment that it circulated some ten thousand reprints of the Motor World's article on the subject, which was published November 17th last. Whether all of those most likely concerned, however, have viewed the situation from its several angles is an open question.

"I doubt if they have so viewed it," a few days since said the sales manager of one of the best known companies in the East, and one whose name is almost a household word when the matter of quality is discussed. The sales manager himself is a man of long experience and with a reputation of having an unusually level head, despite the fact that his name seldom if ever gets into print.

"Wherever full information and proper appreciation of the subject exists it is well known that there are in the hands of the trade at least half as many used cars as the product of 1911 will amount to," continued the sales manager. "I think our people have gone more thoroughly into the subject than most manufacturers, and from the information we have obtained I am satisfied that our estimate of the used cars on hand is under rather than over the mark. If this is true, as we believe to be the case, it is of vital importance to the manufacturer whose production must be adjusted to the condition of the second-hand market; otherwise he will over-produce and be obliged to sell new cars in competition with old ones.

"On his part, however unpleasant it may be, the dealer must bring himself to realize that there has been a terrific depreciation in the value of second-hand cars during the last year. I know one shrewd dealer who, after careful investigation of the prices being allowed for different makes of standard cars, revised his table of allow-

ances and in one month's time he figured that he had made \$10,000 by allowing that much less than originally he had scheduled to allow for cars which he took in exchange. In other words, he allowed from \$500 to \$1,000 per car less than he would have allowed thirty days before he awakened to the fact that the value of the used car was depreciating at a gallop.

"In its article, the Motor World cited several cases of dealers who had been brought to the verge of bankruptcy by their lack of wisdom in taking old cars in part payment for new ones, and if the truth were known the roll of such dealers will be found to be an unpleasantly long one. I have in mind one of our agents, here in New York state, who two years ago started with us with a bank indebtedness of \$9,000, which was part of a \$25,000 loss caused by depreciation in second-hand cars which he had taken in trade during the early part of this decade. This trading all but ruined him. When he took up our line I advised him not to do any trading, and as a result he has conducted his business with practically no exchanges. He will take a car and sell it for his customer, but he will not invest any money in it. In consequence of doing business on this plan he has, at the end of two years, reduced his bank indebtedness to less than \$2,000, and his live, quick accounts amount to about \$6,000 at this moment. He has done about one-half the business that could be done by promiscuous trading, but he has done it without capital and without again putting his neck into a halter. Of course I know that the average dealer will maintain that he cannot meet competition and stay in business unless he trades cars, but the instance I have just cited is proof to the contrary.

"An even more notable instance of the sort is that of our agent in Boston, whose account is one of the largest on our books. For six years he has not traded a car of any sort. He knows how to handle his patrons, and when he cannot induce one to continue to use his old car it is his policy to volunteer to sell it for him. He makes it present the best possible appearance, places it on his floor and advertises it, all without cost to his customer. When the car is sold, he, of course, pays the money to the latter, but he himself carries no part of the load, although he does spend some

\$25,000 per year in rendering this sort of service to his patrons.

"I recall the case of another equally well known firm which probably is conducted with greater system than any other retail house in the automobile business. The members of this firm have reduced retailing almost to an exact science, and there is practically no phase of the automobile business on which they cannot bring figures to bear at a moment's notice. Despite their system, however, they got in bad with the used car and, having worked their way out of danger, they have sought to establish a compromise. Instead of practically unlimited trading they have set for themselves a limit of \$20,000, which sum at no time during the season is to be exceeded. The result, however, has not worked out exactly as anticipated. When their exchanges have reached the \$20,000 limit, of necessity they have had to refuse to accept the old cars of certain of their customers. When, however, the sale of one or more of the used cars which they have on hand brings their risk below \$20,000, they are in position to make trades with other and later customers. The result has been that when the customer whose car is refused learns that the car of someone who came after him was taken in trade he is offended and some good will and perhaps future sales are lost.

"Only recently I heard a Vermont dealer tell a somewhat amusing story having to do with this used car situation. One of his customers came to him and told him he would buy a new car if he would allow him \$900 for his old one. The dealer agreed and promptly sold the old car for \$900, taking in trade another car of the same make and a note for \$400. He sold the latter car, taking in exchange an old single cylinder model and a note for \$200. In sequence he sold the 'one-lunger' for \$300, taking a contract note for \$100 in thirty days and the balance at the rate of \$100 per month. Four sales thus were made and not a dollar in real money changed hands, the new car not yet having been delivered. There are hundreds of cases of this sort, and if it costs the dealer 10 per cent. to sell a car, wherein is his profit on such deals as this?

"Why, bless your heart," laughed the sales manager, "I have been told of shrewd chaps who have bought second-hand cars

THE MOTOR WORLD

TO REGULATE TRUCK CONTESTS

M. C. A. Takes Steps to End Humbug Affairs—Also Makes a Move to Sidetrack the Glidden Tour.

Although the Motor Contest Association held a meeting in Chicago during the show there last week, its work consisted largely of reviewing and amplifying the proceedings of its meeting held in New York last month, and in passing on amendments to the contest rules which will be recommended to the American Automobile Association for adoption, and the details of which will not be made public until their enactment by the latter.

Perhaps the most notable accomplishment of the meeting was its decision to put an end to haphazard truck contests and to make such contests as may be held of real value. The association's ideas coincided with those expressed by the Motor World at the time that William Randolph Hearst's chain of newspapers was promoting a more or less farcical series of truck contests. The M. C. A. proposes hereafter not only to require sanctions for such contests, but means that they shall be run under rules that will mean something. These are to be formulated by a committee composed of Walter White, James Joyce and Walter Wardrop.

The proposal to establish a board of reviews, appeal to which must be accompanied by a fee of \$1,000, was endorsed, and a tentative racing circuit was outlined, but as it depends entirely upon the support of the manufacturers, which support is quite doubtful, the particulars are of comparatively small moment. The establishment of a paid technical committee also was recommended, but as the wherewithal with which to pay it is only dimly outlined, the recommendation does not carry with it much force.

The meeting developed a desire, however, to put an end to the Glidden tour and the Glidden trophy. As a substitute there was proposed an annual international touring contest from Washington, D. C., to Ottawa, Can., which may be styled the "Capital of Capital Tour." This proposed contest, however, largely rests with the president of the United States and the governor-general of Canada. If these high officials can be prevailed upon to "chip in" and give a joint trophy—and they have not yet even been approached on the subject—the contest will be established and the Glidden tour shelved for all time.

Memphis Legislates Against Real Alarms.

The propaganda of the fight that started in the East—where it quickly petered out—against the horn that really warns has reached Memphis, Tenn., where an ordi-

nance prohibiting the use of such alarms was passed on the 1st inst. by the board of city commissioners. Everything other than the conventional hand-operated reed horn variety must go, and all sorts of unnecessary noises, such as cut-out exhausts are tabooed. The police, fire department, salvage and traction company's apparatus is excepted.

Jersey Senate Rejects Reciprocity.

"Farmer" Joe Frelinghuysen, who cultivates insurance policies in a New York office, on Tuesday, 7th inst., had his first grin since he was elected president of the New Jersey State Board of Agriculture; Joseph also serves in the Senate of that state, and his grin was born of his success in again knocking out the Edge reciprocity bill; it was beaten in the Senate by a vote of 11 to 8.

Frelinghuysen, of course, led the opposition to the effort to make New Jersey an integral part of the Union, while Senator Edge naturally favored the bill bearing his name. All the old objections were rehashed; the splendor of New Jersey's roads, the damage done to them and the money it costs to keep them in repair all being paraded in the same old style. Frelinghuysen himself made use of them, of course, and particularly objected to the provision of the Edge bill which would make it no longer necessary for non-residents to designate the secretary of state as their agents in civil suits. Although other states do not require it of Jersey men, Frelinghuysen is terribly afraid lest some "foreign" culprit escape the clutches of his more or less native state.

The argument lasted three hours, Senators Silzer, Gebhardt, Leavitt and Nichols being among those who spoke against reciprocity. Those who voted for it were: Senators Ackerman, Edge, Fielder, Fitzherbert, Johnson, Low, Osborne and Prince. When the defeat of his bill became apparent, Senator Edge changed his vote, in order that he might be in position to move for a reconsideration of the bill, which means that the last has not been heard of the fight for reciprocity.

Pennsylvania Must Have Cash, Not Checks.

Notice has been issued by the automobile bureau of the Pennsylvania State Highways Department, which handles automobile licenses, that hereafter no checks will be taken and only par funds be accepted in payment of license fees. This action was made imperative owing to an order of the state treasurer.

Vancouver Show Is Declared Off.

A sudden estrangement between the dealers and the promoters has caused the postponement of the automobile show, which was to have taken place at Vancouver, B. C., during the week of February 27 to March 4. The postponement is indefinite.

at low prices for no other purpose than to use them in making deals for new models, well knowing that the average dealer will allow him far more for the old crotch than he, the purchaser, paid for it.

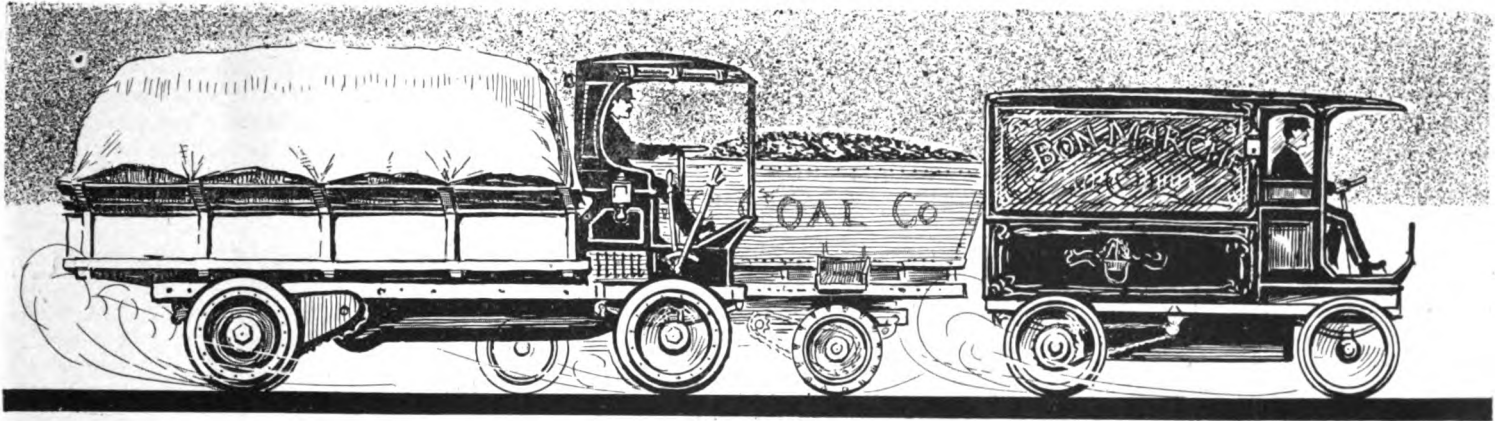
"Once in a while there may be found a firm that is so organized and supplied with that peculiar kind of salesmanship which enables it to get rid of second-hand cars without much, if any, loss, but even in such cases two sales, and sometimes as many as five, are being made for the profit of one.

"Perhaps I may be letting the chips fall where they may, but it is my opinion, nevertheless, that the manufacturers as a whole do not desire to stop the trading business, although there may be those who are anxious to check it. I believe that most of them think that trading is a necessary evil, and maybe it is, but it strikes me that unless automobiles can be made and distributed at a profit such as prevails on typewriters, harvesting machines and other productions that are built at a very low cost and sold at a very much larger profit on installments there will be little chance of exchanging second-hand cars and absorbing them by the manufacturing interests. The owner must bear the loss, or continue to drive his car a few years longer, and in the latter event production necessarily must be curtailed or over-production will result.

"It has come about that the trade believes the Motor World is the one publication that is not afraid to call its soul its own and that tells the whole truth of almost any subject, and when in its article on the used car situation it intimated that the worst offenders in the matter of trades are the manufacturers' branch houses it struck the nail on the head. Too many of the manufacturers, as I have said, look upon trading as a necessary evil, and when they place a real curb on their branches they will begin, at least indirectly, to assist their agents, for it is the branches that set the exaggerated high prices on old cars and the agent, necessarily, is hard put to meet them and is forced to do what he otherwise would be very slow to do.

"You can place me on record as believing," concluded the sales manager, "that the trading of old cars for new ones during the next two or three years will be disastrous to the average dealer, and it goes without saying that whatever is disastrous to the dealer will not prove helpful to the manufacturer. It is all right to be optimistic, but painting rainbows or 'playing ostrich' never yet served good purposes and it never will do so. Our people certainly have no cause to be pessimistic, but they are not closing their eyes to the truth when it confronts them.

"The used car constitutes one of the most serious problems confronting the trade, and the manufacturer or dealer who does not permit it to enter into his calculations has a day of reckoning coming."



CHICAGO SHOW SHIFTS FROM CARS TO TRUCKS

Chicago, Feb. 7.—After a highly satisfactory week with pleasure cars—satisfying both in point of attendance and in the volume of actual business done—Part I of the Chicago show quickly made way for Part II, which is made up of business vehicles and motorcycles.

The reign of the pleasure car ended at 10:30 o'clock Saturday night; the day of the commercial vehicle began at 10 o'clock yesterday (Monday) morning.

The one was favored by a week of glorious weather, the other was ushered in by a pitiless snowstorm, but the transition from cars to trucks was little hampered, the fact that the First Regiment Armory, in which last week's large overflow of cars and accessories was staged, was surrendered and the trucks and remaining accessories were massed in the Coliseum, greatly expediting the task; and as there are no vehicles staged on the Coliseum's single gallery, no such herculean labor was necessary as was the case in New York's show in Madison Square Garden, where two balconies had to be relieved of their loads of heavy vehicles before even heavier ones could take their place.

The formal inauguration of Part II was preceded by a street parade, which, though the heavy snowfall undoubtedly served to diminish, it did not serve to prevent. Fifty-two wagons and trucks comprised the turnout.

The spectacular dressing of the show remains unchanged. The "billows" of white staff work, the tinted seashells and vases filled with flowering plants, the four towering fountains with their undraped maidens, the panelings of painted flowers all remain, and though they are far out of keeping with trucks and wagons and fire engines, few have remarked the fact, and no one cares, so what matters it?

While there are fewer exhibitors by nearly 100 than there were in Part II of Madison Square Garden—whole shoals of accessory exhibitors did not remain here for this, the second week—there are more vehi-

cles in evidence, 127 as against 96, and more exhibitors of trucks, 59 as against 33. There were seven electric pleasure cars included in New York's total, too. Here there is but one, and it is not an electric, but a gasoline touring car; one of the new Ohio makers "put one over" on the Coliseum management, and is showing the car in connection with its commercials, and without protest.

Two of those booked to show here did not put in an appearance, the Waterville Tractor and the Courier, but four late comers, Brush, Dart, Randolph and Schacht, more than filled the voids.

If the Chicago commercial vehicle show has the distinction of numbering more exhibitors of vehicles as well as more vehicles than figured in Part II of the New York show, it also is entitled to the further credit of producing a greater amount of structural novelty. It is further noteworthy that it brought out a much stronger contingent of adherents to the two-cylinder opposed type of engine than did New York. The comparative figures show that whereas there were 12 two-cylinder cars at New York, and no less than 40 of four-cylinder construction, the present exhibition at Chicago reveals 33 two-cylinder machines and 56 four-cylinder. That is to say, there were three two-cylinder cars for every ten four-cylinder in New York, as against six to ten in Chicago. It is noteworthy also that there are 22 electric commercial vehicles in Chicago as against only 16 shown in New York during the second week of the show in Madison Square Garden.

In point of fact, however, the greater number of vehicles at Chicago equipped with the opposed form of engine is not as significant as at first might appear, inasmuch as a greater number of the machines on exhibition here this week are of the lighter class, and, therefore, are of the sort for which the compact and relatively simple opposed engine is particularly well suited. Nevertheless, the fact must not be

overlooked that one or two large machines also are on view which have horizontal engines, while the four—as well as the two-cylinder opposed type is in evidence.

One point in connection with the solid representation of opposed engines is well worth taking into special consideration in view of the present tendency in the design of vertical engines to develop the long-stroke cylinder. That is, that with the ordinary style of opposed engine, long strokes are practically out of the question. The reason is not far to seek, when it is considered that with the crankshaft placed in the longitudinal axis of the chassis, it is highly desirable to keep the overall width of the motor within the dimensions of the frame in order to bring it low enough to secure a straight-line drive without canting the motor excessively. In other words, with ordinary methods of mounting, the total allowable distance between cylinder heads is so slight as to render it practically impossible to secure adequate power without developing a bore as great as or greater than the stroke. Practically the only alternative, with shaft transmission construction is to employ four cylinders instead of two. This several builders are doing, though without succeeding in producing a very long-stroke motor at best. Others who prefer chain transmission from the engine thus are enabled to place the cylinders fore and aft of the chassis and thus to secure a greater ratio of stroke to bore.

The result of the short-stroke construction, which thus is to be considered a necessary concomitant with the double-opposed form of engine, is to secure a high-speed engine that, under reasonably good conditions of design and construction, almost invariably proves both trustworthy and relatively silent in operation and altogether reliable. Thus, while the builders of vertical engines are verging toward longer strokes, it would appear that those who pin their faith to the opposed type are fast developing an independent school of design that, conservative as it may ap-



PART II OF THE CHICAGO SHOW—COMMERCIAL CARS GROUPED IN THE COLISEUM

pear, is securing results that amply justify its policy.

In the way of structural novelty may be mentioned such designs as that of the Mais truck, in which the paired cylinders of the quadruple motor are enclosed in cylindrical jacket housings and which also has an original form of rear axle with double reduction gearing. The Avery tractor, which is designed especially to satisfy the multiple requirements of the progressive farmer, is another radical product, the "mud-hook" or creeper, wheel construction, which is one of its exclusive features, being particularly noteworthy.

The appearance of the Couple-Gear truck, with its four-wheel driving and steering arrangements, and the Rovon, which is front-driven and front-steered, serves to renew interest in certain principles which, in the opinion of many authorities, are of the greatest promise. The representation of electric vehicles, while not productive

of a very great amount of novelty, served to bring out one distinctly original type in the Walker balance gear drive, in which a single motor is mounted within the rear axle housing and drives the wheels through a floating axle construction and double reduction. A particular advantage of the construction is that all moving parts are fully enclosed from one end of the system to the other.

As has been the case at each of the shows this year, a majority of the machines on view are of standardized construction, as far as most of their details are concerned. This is true of both the new comers, such as the two different products each of which bears the name Clark, the products of the Clark Power Wagon Co., and the Clark Delivery Car Co., the Dart, Dayton, Economy, Harder, Federal, Mercury, Schacht and Schmidt. The more staple products, such as the Franklin, Knox, Hewitt, White, Garford and Alco

trucks, that were on view at the earlier show in New York, as well as the Grabowsky, Sampson, Pierce-Arrow, Kissel, Overland and others, contribute to the general average of uniformity in design.

As always is the case, it is to the newer products that the visitor turns with particular interest, however, as to those which may be expected to reveal sundry new angles of thought on old and puzzling problems. Therefore, the real story of the show must deal almost exclusively with exhibits which are disclosed for the first time this week.

Probably no greater variety of design exists in any part of the modern commercial motor car than in the location of the motor and the manner of its support. Motors have been located under a forward hood, under the driver's seat and below the floor boards, and each design calls for a different frame arrangement and engine support. Vertical motors can be placed either under the forward hood or beneath

the diver's seat, but if it is desired to locate the power plant below the floor boards, not only must a horizontal engine be used, but it must be dropped below the frame line, as well. In the United States motor truck, the forward portion of the main frame is dropped so that the horizontal, double-opposed motor forming the power plant may be set in place under the floor boards

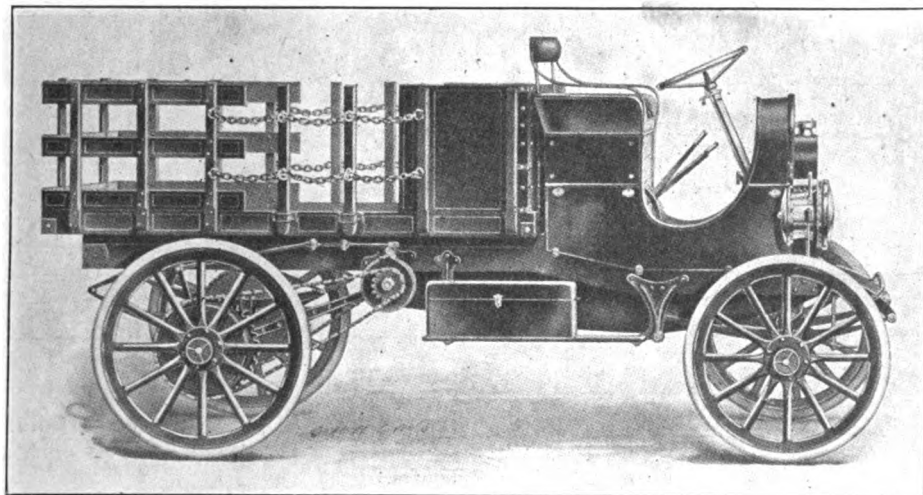
facture of several large motor trucks and moving vans. Although the first of these were manufactured for the firm's own use, the exhibition and design of these trucks show well what can be done by the motor car in this field.

The chassis is of three-ton capacity, and on it may be mounted the conventional box-like body familiar on all moving vans

rear wheels by means of the usual chains. The springs are unusually heavy, and the body has a sufficient overhang to allow the van to be loaded easily from platforms, although the rear wheels do not carry over two-thirds of the entire weight of the car and load.

Monitor light trucks were exhibited at the Grand Central Palace in New York City, but not in the style shown in Chicago, where there appears a brand new design of one-ton chassis. This car is shaft driven, has a 100-inch wheelbase, a 56-inch tread and is provided with a horizontal, two-cylinder, double-opposed motor having a $4\frac{3}{4}$ -inch bore by $5\frac{1}{4}$ -inch stroke. The transmission is of the three-speed selective type, although special models are made with the planetary variety.

One of the most striking features in the design of the chassis is the method of motor and transmission suspension. The main frame of the chassis is of pressed steel of channel section $4\frac{1}{2} \times 3-16$ inches. This frame is straight, there being no drop throughout its entire length. A sub-frame with a double drop is set in the forward half of the main frame, however, and in this the motor and transmission are set. The greater drop of the sub-frame is in the section in which the motor rests, and is of a sufficient amount to allow the crankshaft to line up accurately with the main shaft of the transmission. This gives the same effect as though a unit power plant



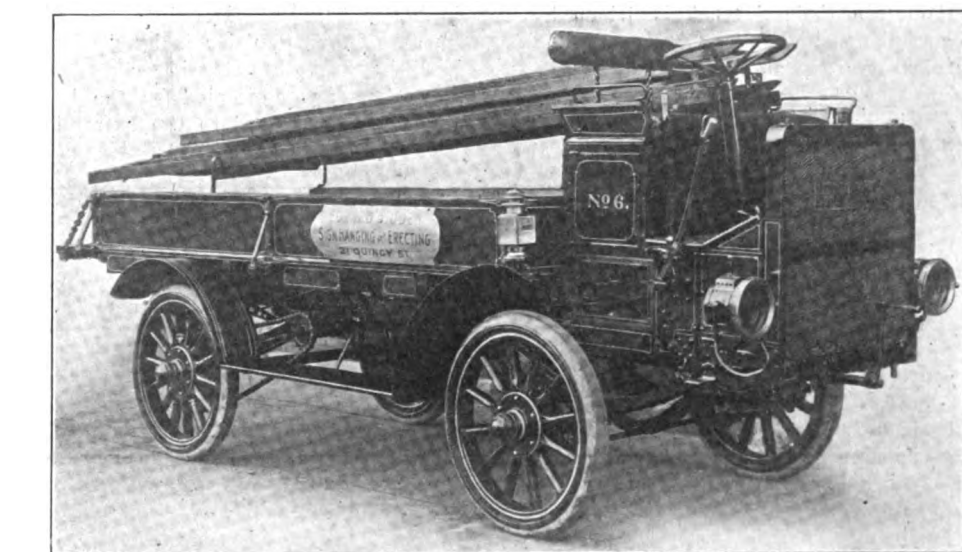
UNUSUAL DESIGN OF THE UNITED STATES TRUCK

in front of the driver's seat, and all parts of the engine are rendered accessible by the removal of two of these boards. The double side chain drive is used on this machine, and as all parts of the running gear are set above the axles, a minimum clearance of 17 inches is obtained. The frame rests on semi-elliptic springs in front and full-elliptic in the rear.

The makers have adopted the design followed by several commercial car builders in placing the steering wheel at the left half of the forward seat and the control levers operating the gear shift and emergency brake in the center of the floor space. This gives left-hand drive and right-hand control, and is a design considered especially well adapted for operation in congested city traffic. The trucks of this make on exhibition are of one and one-half tons capacity, and the two-cylinder motor of $5\frac{1}{2}$ -inch bore and 6-inch stroke is conservatively rated at 25 horsepower.

The statement that a horizontal motor must be used if it is desired to place the power plant under the forward floor boards does not hold good in the case of the large motor trucks and moving vans. These are similar to the horse-drawn type, in that the driver's seat is placed far up in the front of the large enclosed body, and plenty of room is afforded for the installation of even a large vertical motor. This is well demonstrated in the exhibit of the Harder Fireproof Storage & Van Co., which, while it has long been engaged in the moving, trucking and storage business, recently has entered the automobile field by the manu-

facture of several large motor trucks and moving vans. Although the first of these were manufactured for the firm's own use, the exhibition and design of these trucks show well what can be done by the motor car in this field.



HARDER $1\frac{1}{2}$ -TON 24 HORSEPOWER TRUCK

ported directly upon a sub-frame at its forward portion. The four cylinders of the motor are cast in pairs, and are of the conventional L-head shape. A cone clutch forms the connection between the motor and the transmission, the latter of which is carried on cross-members riveted to the sides of the main frame. A differential and jack-shaft transmit the power to side sprockets from which connection is made with the

were used, and does away with the necessity of a universal joint between the motor and transmission. Either unit is removable independently of the other, however. The sub-frame is suspended at each end from cross-pieces riveted at their extremities to the sides of the main frame.

The front springs of this car are semi-elliptic, while those at the rear are of the full-elliptic type. The motor is equipped



THE FEDERAL TRUCK WHICH HAS LEFT HAND DRIVE AND LEFT HAND CONTROL

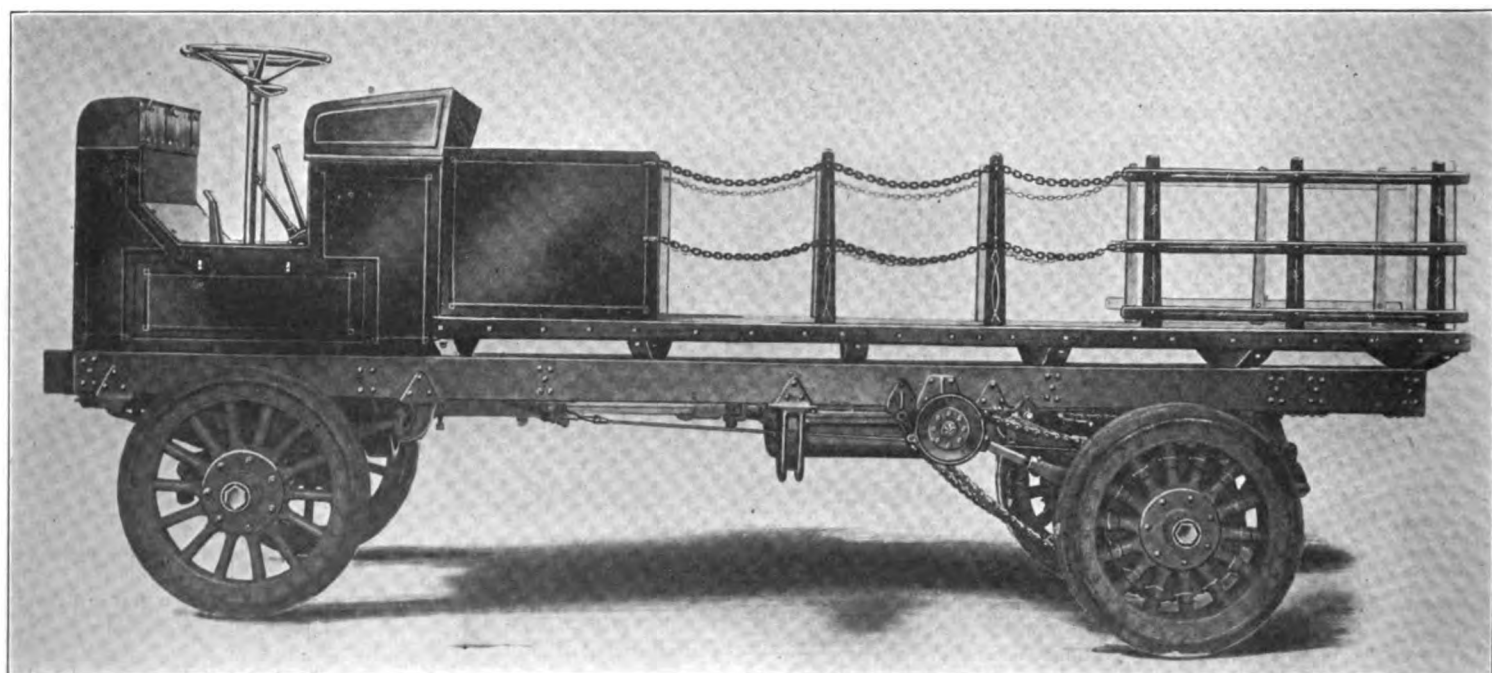
with a Bosch magneto and two sets of spark plugs in each cylinder to provide for both magneto and battery ignition. The crankshaft, connecting rod and wrist-pin bearings are oiled by the splash system of lubrication. A governor attached to the forward end of the crankshaft prevents the machine from exceeding a speed of 15 miles an hour, a rate that is attained when the motor is turning at 1,000 revolutions per minute on the direct drive.

The one-ton Federal truck is driven by a power plant similar to that in use on many pleasure cars, and consists of a four-cylinder L-head motor having the cylinders cast in pairs and measuring $4\frac{1}{4}$ inches bore by $4\frac{1}{2}$ inches stroke. The centrifugal

pump and the magneto are driven by the same shaft, and as a fixed spark is employed, and the foot accelerator is used entirely to regulate the speed of the motor, there are no control levers located on the steering wheel. The steering wheel and side levers are placed at the left, and, consequently, the car is decidedly of the "left-hand control" type. A three-speed, selective transmission is suspended from a cross-member of the frame and is bolted to the differential housing that is supported in heavy brackets riveted to the side-members. The final drive is by means of the jackshaft and double side chains, but the sprockets are concealed by the brake drums which are keyed to the extremities of the driving shafts. This design of

service brake is one that is being followed by many of the manufacturers of heavy trucks.

The Dayton motor truck appears rather novel at first glance, because of the fact that the radiator seems to be set in the dash and is "framed," as it were, at the top and both sides. The filler for the radiator projects from the front near the top in the form of an elbow. The motor is of the L-head type, and consists of four pair-cast cylinders, $5\frac{1}{2} \times 5\frac{1}{4}$ inches. The power plant is placed under the floor boards and seat, and is supported on a heavy sub-frame. The transmission is of the three-speed, selective type, mounted on a dropped cross-member and drives to the rear wheels



THE NEW THREE-TON DAYTON TRUCK EQUIPPED WITH LEFT-HAND DRIVE

by means of a jackshaft and double side chains. The steering is done from the left side of the seat, but the emergency brake and gear-shift levers are mounted in the center of the floor to provide for right-hand control. The model on exhibition is designed to carry a three-ton load, although trucks of double this capacity, but of the same general features, are produced by the Dayton company.

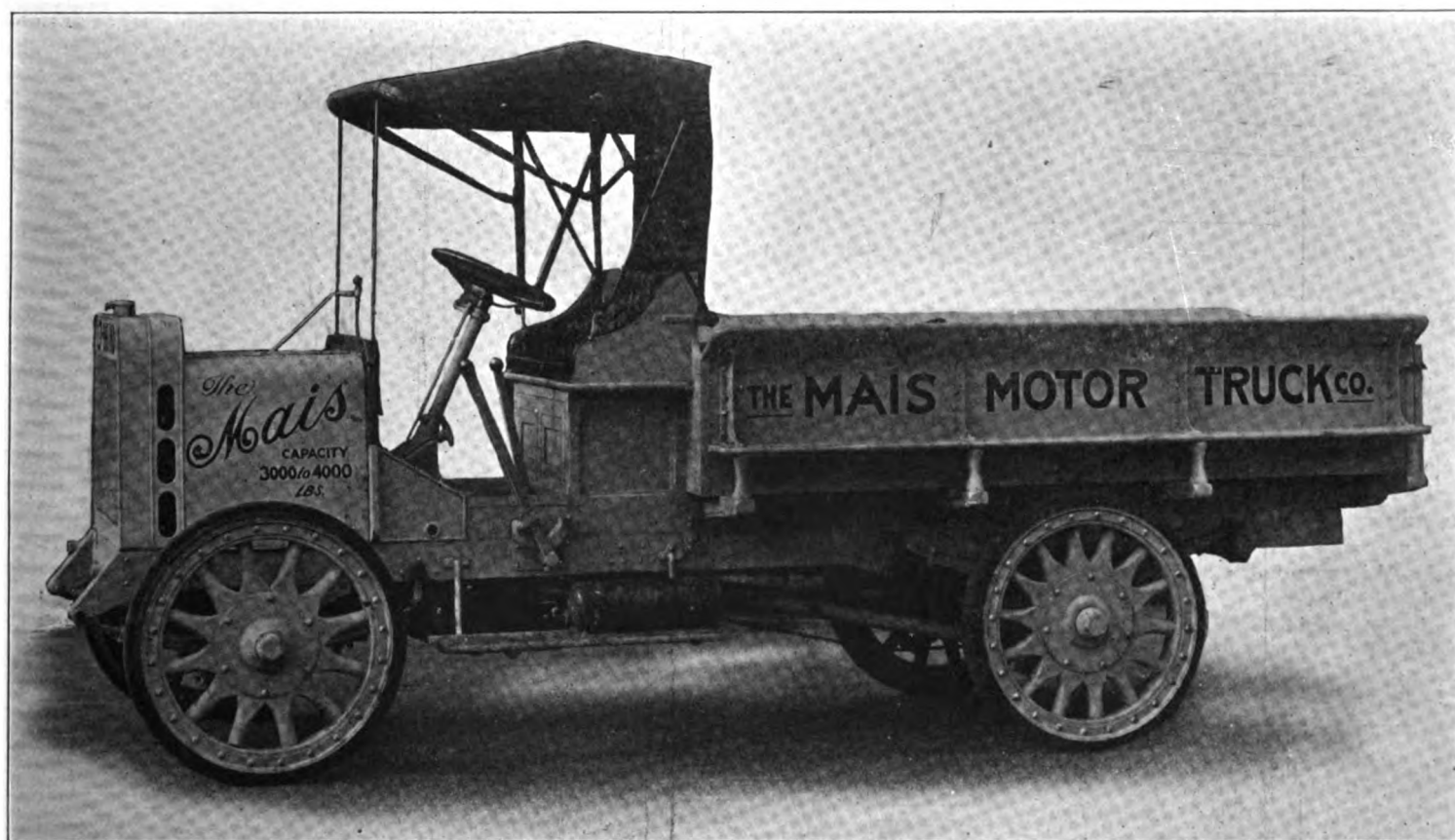
From an engineering standpoint there probably are more original features of design to be found on the Mais truck than on any other commercial vehicle on ex-

hibition. The four-cylinder motor is of the long-stroke type, measuring $3\frac{3}{4}$ by $5\frac{1}{4}$ inches, and is designed for a compression of but 45 pounds. Notwithstanding the low compression and small bore of the cylinders, however, the motor develops over 30 horsepower on the blocks, and this power is ample to carry the two-ton truck at its maximum speed of 15 miles an hour. The cylinders are of the T-head variety and are cast in pairs. That the cylinders are of this shape is not noticeable except on close inspection, however, for the paired castings are cylindrical, and there are no projections for valve pockets or ports. Consequently the valves are enclosed, and the motor is made very compact, as is evidenced by the fact that the bonnet under which it is placed is but $23\frac{1}{4}$ inches long. A striking feature of the motor design is

found in the size of the connecting rod bearings which are $3\frac{1}{2}$ inches wide and $1\frac{1}{4}$ inches in diameter. The designer is so certain that these dimensions will practically eliminate wear that shims are not provided, and the bearing caps are bolted tightly together after the bearings have been fitted. A unit power plant design is used, the rear end of the casting being suspended from a ball joint attached to a cross-member of the frame. The two points of the forward end of the motor rest on another cross-member, which, however, is dropped in order to allow the unit power plant to lie in a level position. The clutch is of

gency brakes operated by levers conveniently located at the left of the seat.

The transmission is of the three-speed progressive type, but is different from most others of its design in that the propeller shaft is driven at a slightly greater speed than is the crankshaft of the motor when the gears are thrown into high. There is no governor on the motor, but a hydraulic speed regulator is provided on the main shaft of the transmission to prevent the car from running over 15 miles an hour. By this arrangement the motor may be speeded up as much as desired when the transmission is in the lower gears, but the rate



THE MAIS TRUCK WHICH HAS MANY POINTS OF ORIGINAL CONSTRUCTION

hibition. The four-cylinder motor is of the long-stroke type, measuring $3\frac{3}{4}$ by $5\frac{1}{4}$ inches, and is designed for a compression of but 45 pounds. Notwithstanding the low compression and small bore of the cylinders, however, the motor develops over 30 horsepower on the blocks, and this power is ample to carry the two-ton truck at its maximum speed of 15 miles an hour. The cylinders are of the T-head variety and are cast in pairs. That the cylinders are of this shape is not noticeable except on close inspection, however, for the paired castings are cylindrical, and there are no projections for valve pockets or ports. Consequently the valves are enclosed, and the motor is made very compact, as is evidenced by the fact that the bonnet under which it is placed is but $23\frac{1}{4}$ inches long. A striking feature of the motor design is

rather unusual design, and consists of a four-armed spider that revolves within a cast-iron ring when the clutch is released. A bronze shoe is pinned to the end of each arm of the spider, and as these shoes are shaped to conform to the curvature of the iron ring, a large friction surface is obtained. When the clutch is engaged, the four shoes are pressed against the revolving ring by means of individual cams, each of which is moved by a lever that is attached to the operating collar. A notched quadrant attached to the clutch release pedal acts as a transmission lock, and prevents the gears from being shifted until the clutch is thrown out. In like manner the clutch cannot be re-engaged until the gears are thrown to neutral or are in proper mesh. The car is driven from the left-hand side, and the gears are shifted and emer-

of travel of the car itself will be kept within the proper limits.

As may be inferred, the car is shaft-driven, but a supplementary chrome-nickel forging provides the effect of a solid rear axle on which the wheels and springs are mounted. The live axle and differential are housed in a casing that is bolted to heavy brackets at the middle of the solid forging, the latter being curved to allow it to follow the contour of this differential housing. To each end of the live axle is keyed a pinion having a two-inch face, and this meshes with the teeth of an annular gear bolted to the spokes of each rear wheel. By virtue of the before-mentioned curve in the solid rear axle, there is no necessity for the use of a universal joint in either live axle, and the drive is in a straight line from the differential to

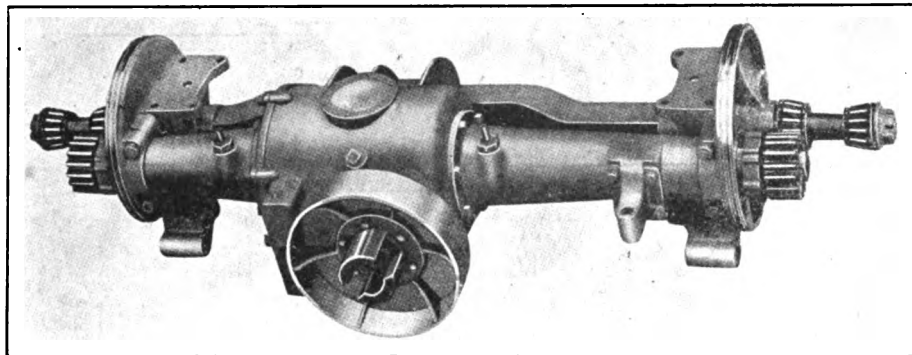
the annular gears of the wheels. The speed reduction in the differential is two to one, and that between the spur and annular gears is four to one, thus giving a total gear reduction of eight to one between the propeller shaft and the rear wheels. But the propeller shaft is geared above the crankshaft on high speed in the ratio of seven to eight, and consequently the reduction between the crankshaft and rear

In addition to this model, the Schacht company exhibits an 800-pound delivery car having horizontal, double-opposed engine having a bore of $5\frac{1}{8}$ inches and a stroke of $4\frac{1}{2}$ inches. The motor is suspended from the main frame under a front hood, and is placed with its pistons traveling in a direction parallel with the wheelbase. The power is transmitted to the planetary transmission under the seat by means of

motor is cooled by the thermo-syphon system of water circulation.

Nominally rated at 1,000 pounds capacity, though provision for 50 per cent. overload is made, the Dart car, exhibited by the Dart Mfg. Co., Waterloo, Ia., comes under the classification of light delivery car. The chassis which mounts a panel top delivery body resembles in many respects other cars in this class and is equipped with a two-cylinder opposed 16 horsepower motor placed under the foot boards and cooled by water. For ignition the Splittdorf dual system is used. Power is transmitted through the medium of a multiple disk clutch and two-speed planetary transmission, final drive being by side chains. The wheels are 36 inches in diameter and are shod with solid rubber tires; the wheelbase is 80 inches.

The center of interest of the Abresch-Cramer exhibit consists of a motor hose cart mounted on a one-ton chassis. The wheelbase is 140 inches and the body has carrying capacity for six men and a thousand feet of hose. The car is driven by a four cylinder T-head motor having a $4\frac{3}{4}$ inch bore and a $5\frac{1}{2}$ inch stroke, which is suspended by three lugs on each side



UNIQUE REAR AXLE CONSTRUCTION OF THE MAIS TRUCK

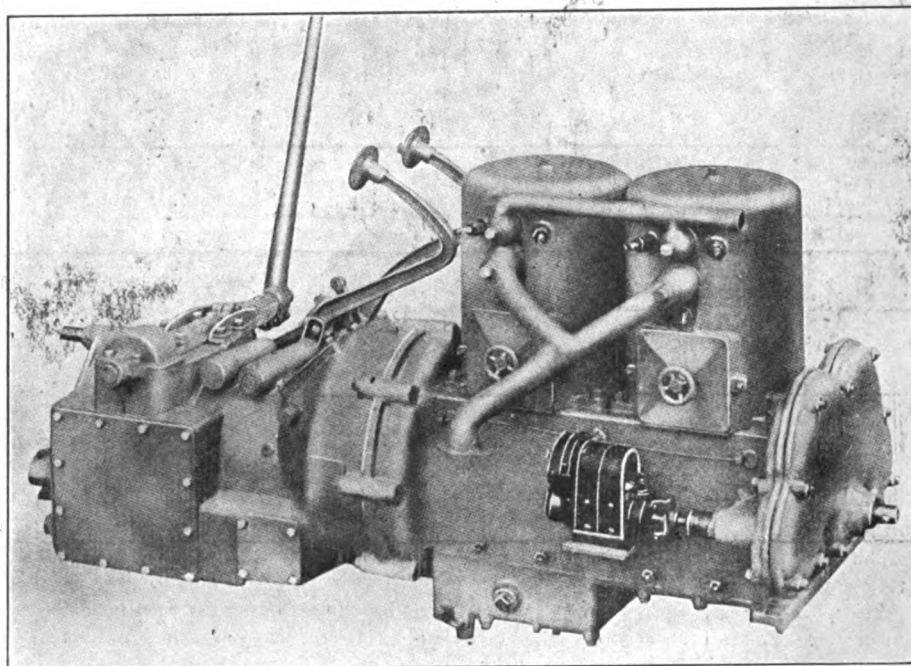
wheels is, while running on high gear, seven to one. The spur and annular gears in each rear wheel are made dustproof and oiltight by a surrounding collar in which have been cut three grooves to admit of the introduction of heavy felt strips.

Two strut rods extend from the ends of the rear axle and unite at their forward extremities, thus forming a V-shaped torque and radius rod combined. The apex of this V is mounted in a ball joint secured to the middle of a cross-member of the frame and provided with a spiral spring to take up the wear of the socket and prevent the ultimate rattling of the rods in the joint.

The ignition is of the double type in that two spark plugs are used with each cylinder, but neither dry nor storage batteries will be found on the car. Instead of batteries an auxiliary magneto is provided, and as this is located on the opposite side of the motor from the main instrument, and is driven by a separate shaft, two entirely independent ignition systems are furnished. The cooling water is circulated by the thermo-syphon system, and the radiator is supported on two spiral springs mounted at the extreme end of the main frame.

A vertical four-cylinder, 45-16 by 5 inch, block motor, placed under a front hood, forms the power plant of one of the delivery car models produced by the Schacht Motor Car Co. This has a 120-inch wheelbase, and in other dimensions and design it is similar to a modern touring car with delivery body. A three-speed, selective transmission is used, and the final drive is by means of propeller shaft, differential, and semi-floating rear axle. The front and rear springs are semi- and three-fourths-elliptic, respectively.

a single chain passing over a sprocket running in the crank shaft of the motor near the flywheel. The clutch is embodied in the flywheel of the motor and throws the chain and sprocket out of operation when



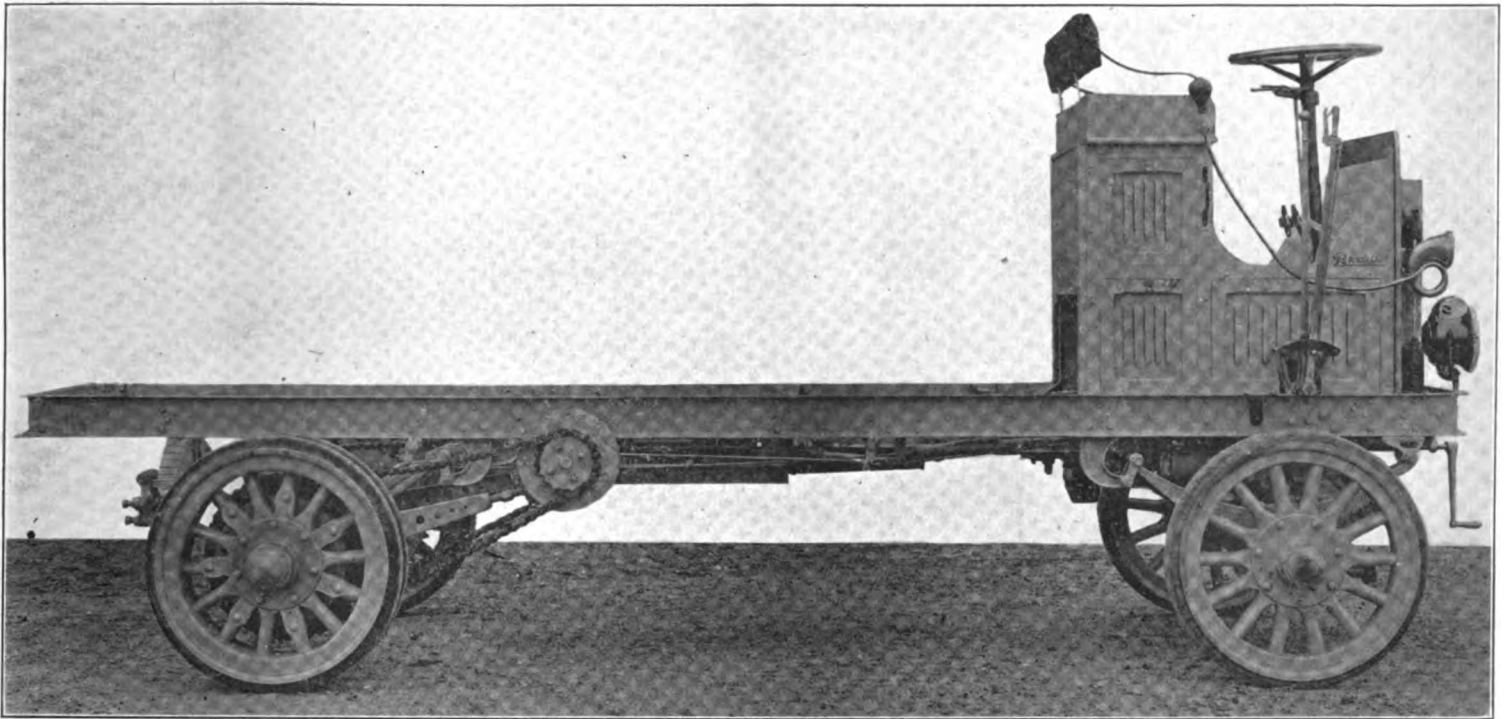
UNIT POWER PLANT OF THE MAIS MOTOR TRUCK

it is desired to have the engine run free.

The planetary transmission is mounted on the jack shaft housing, which is supported in heavy brackets riveted to the side members of the main frame, and the final drive is by means of double side chains to the rear wheels. Semi-elliptic springs are used in front, while those in the rear are of the full-elliptic type. The

resting on the side members of the main frame; a multiple disk clutch transmits the power to the three-speed, selective transmission. The final drive is through a jack shaft and double side chains to the rear wheels. The differential is mounted integral with the transmission.

The construction throughout is exceedingly heavy, the frame being made of six-inch pressed steel channel section. The



THE SOLID-LOOKING BRODESSER THREE-TON TRUCK WHICH SELLS FOR \$3,500

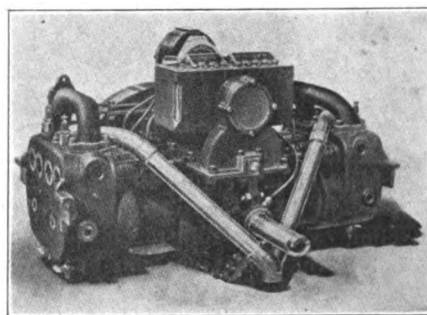
rear wheels are 42 inches in diameter, while those in the front are 36 inches. Full elliptic springs are used in front, and platform at the rear. This machine is different from some of the other fire trucks on exhibition in that the motor is placed under a front hood instead of under the foot boards and driver's seat. Hand extinguisher and a 40-gallon chemical tank are included in the fire fighting equipment.

The Clark delivery car of 1,500 pounds' capacity is another vehicle that is provided with a four-cylinder, block motor, but instead of being placed under a forward hood, this power plant is installed directly in front of the driver's seat with its top projecting six inches above the floor boards. This is rather an unusual design, but the projection of the cylinder heads is well taken care of by a special form of floor covering. This covering is in two pieces, each of which is cast from aluminum, and is so shaped that the top of the motor is bridged over and is practically concealed.

The motor and transmission are set in a sub-frame and the final drive is by means of a propeller shaft to the rear axle. This propeller shaft is encased in a housing that is bolted to the differential casing at one end and is mounted at its other extremity in a pivoted joint that is suspended from a cross-member of the main frame. This forms a torsion tube that serves to absorb the thrusts of the driving gears, and a radius rod is provided at each end to relieve the strain on the springs and clips. Semi-elliptic springs are used in front, while those in the rear are of the full-elliptic type and are provided with auxiliary

spiral springs at the rear shackles to take care of excessive vibration.

The Brodesser two and three-ton truck is one of the few models having the valves of the four-cylinder motor located in the head. The larger of these motors measures 4½ inches bore by 5 inches stroke. The three-speed, selective transmission and double side chain drive to the rear wheels



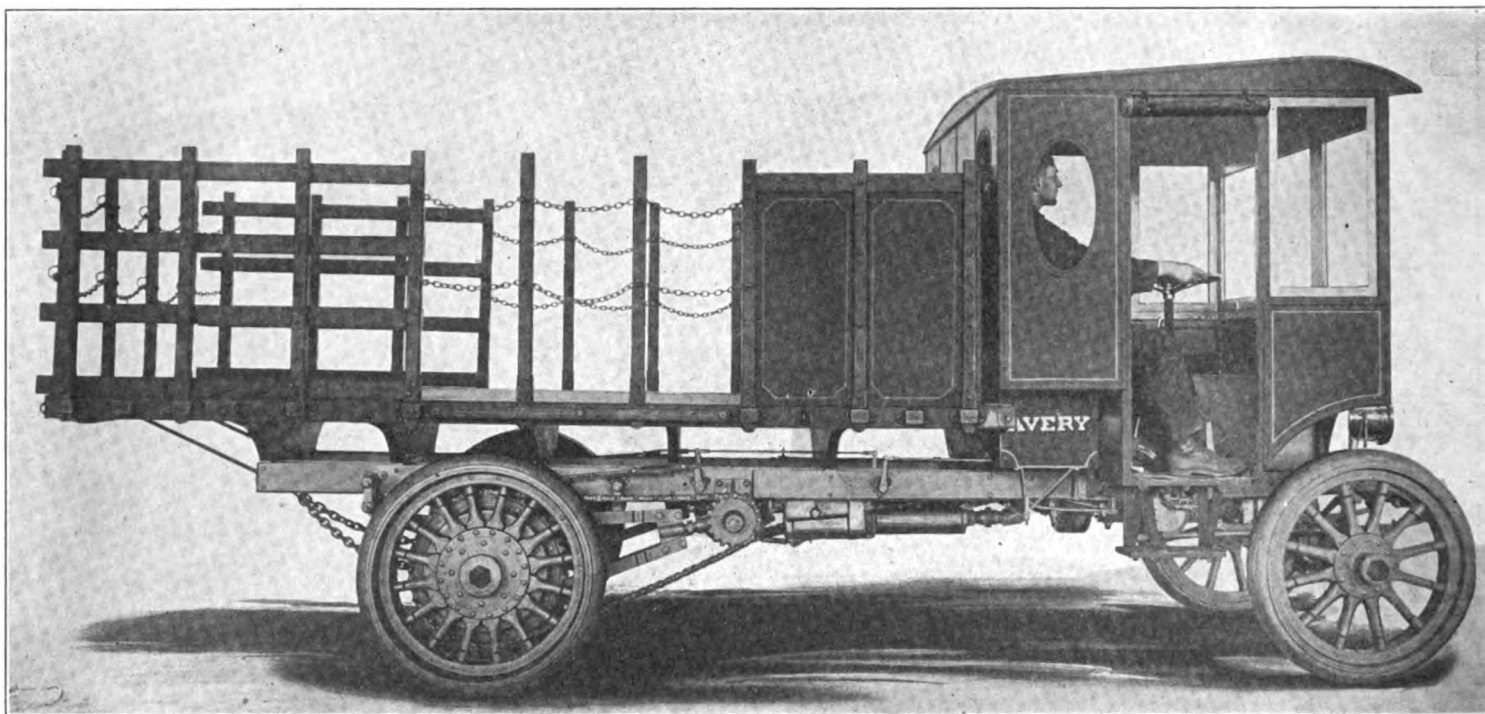
BRODESSER POWER UNIT

are of much the same design as that found on many of the best cars of this type. The mounting of the radiator is designed to provide against the effects of shock in a manner similar to that employed successfully in one or two other instances. Two lugs are bolted to each side of it through which holes have been drilled for the accommodation of a vertical rod that projects up from the end of each side member of the main frame. Each of the bottom lugs rests on a spiral spring which divides the weight of the radiator with its companion on the opposite side. A spiral spring, also under compression, rests against the top of each bottom lug and is held in place

by a stop surrounding the vertical rod. The entire weight of the radiator thus is carried on the springs, and spring checks are provided for the recoil.

One of the unusual features to be found in the design of the Marquette wagon lies in the location and method of attachment of the oiler and oil tank. The case containing the mechanical oiler and lubricant supply is cast integral with the crankcase cover of the horizontal, double-opposed motor forming the power plant, and thus it constitutes the highest portion of the engine. The magneto, which is geared directly to the crankshaft, rests on a steel bracket that is bolted to the forward end of the crankcase. Planetary type of transmission and the usual double side chain drive to the rear wheels are used. The motor of this car is of unusual proportions, having a bore of 5½ inches and a stroke of but 4 inches. Semi-elliptic springs are used on the front axle, while those supporting the rear of the frame are of the platform type. An additional leaf spring is secured at its center to the underside of a cross-frame member directly over the rear axle. When the car springs are unduly deflected, the ends of this additional spring strike stops provided for the purpose on the center of the lower half of the rear springs.

The needs of the farmer have been well cared for in the design of the Avery Farm Tractor and City Truck, several of which are on exhibition. Probably the feature of design that will first attract the attention of the casual observer is the nature of the tread of the wheels. While the car may be obtained with ordinary solid rub-



AVERY TRACTOR WITH STAKE TRUCK BODY AND ENCLOSED DRIVER'S CAB

ber tires, the regular equipment consists of twin rims, both front and rear, in the peripheries of which holes are cut which have been filled with two-inch wooden plugs. The holes in the separate halves of the twin rims are "staggered," and a non-skid tread is formed that is especially well adapted for use on soft country roads. This same tread, however, is suitable for short hauls on pavements, and the farmer thus is supplied with a wheel which will carry him with equal facility in both city and country. Although the machine is equipped with a stake or frame body capable of carrying one and one-half tons, it is as a tractor that the car is employed to the best advantage.

In order to supplement the wooden plug tread and increase the tractive effort of the rear wheels in all manner of soft surfaces, attachments are provided for the rear

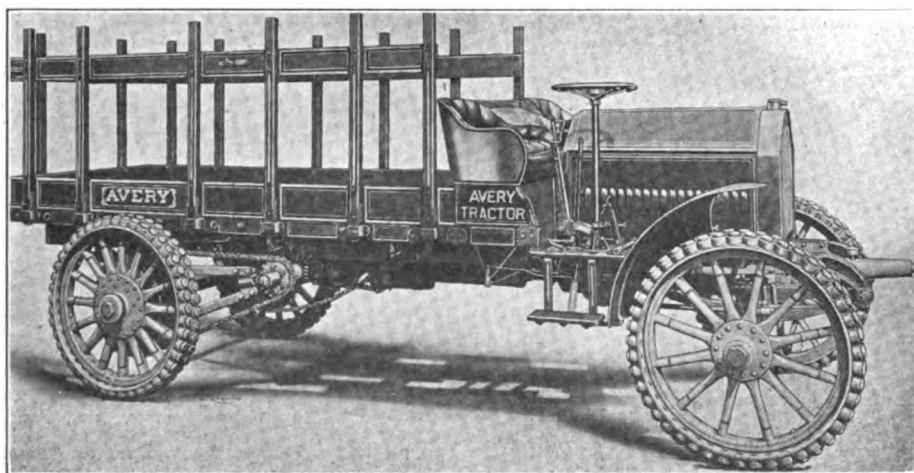
wheels, by means of which the machine may travel over ploughed ground or negotiate almost any kind of a road, or absence of road. These attachments consist of extension rims, one of which is clamped to each rear wheel. In the periphery of each rim extension is a series of iron paddles, each of which is so mounted that it may be made to lie flat with the tread of the rim. These blades, or paddles, lie flat along the rim when the machine is traveling over a hard surface, but the instant mud or other soft material is encountered, they are forced outward radially by means of springs extending $4\frac{1}{4}$ inches out from the tread, and each in turn digs down into the road surface, thus giving a firm grip to the wheel and preventing all slipping. When there is to be a considerably amount of traveling over soft soil, the blades may be locked in the radial position by means of

a pin passed through holes in the rim casting and the base of each paddle.

A spiked wheel attachment for use when the tractor is to be employed for drawing heavy loads recently has been added to the equipment. Eight of these spikes are used to a wheel, and each is attached at its inner end to an iron ring that surrounds the hub. The sharpened ends of the rods pass through slots cut in the periphery of the detachable rim. When the iron ring is turned in one direction, all of the spikes are drawn in so that the points lie flush with the periphery of the rim and the rods form tangents to the controlling ring. When this ring is turned in the opposite direction, the rods are forced out through the slots in the rim radially to the hub of the wheel. The controlling ring is operated by means of a hand lever that lies flat against the wheel, the handle of which fits in retaining notches cut in the edge of the rim.

The four-cylinder, water-cooled motor that is used to drive this truck measures $4\frac{3}{4}$ inches bore by 5 inches stroke, and is rated at 36 horsepower. Its output, however, can be used for purposes other than that of driving the car, and by attaching a belt to a pulley that is keyed to the forward end of the projecting crankshaft, threshing, shelling, pumping and baling machines and saw mills may be operated.

The frame of this particular "Farmer's Friend" is of construction steel and is riveted throughout. The transmission is of the three-speed, selective type and drives the rear wheels by means of the usual jackshaft, differential and double side chains. All wheels are $41\frac{1}{2}$ inches in diameter, and as the motor is located well above



AVERY TRACTOR TRUCK, SHOWING WOODEN PLUG TIRES

the front axle under a forward hood, ample clearance for even the roughest going is obtained. A peculiar feature of the body design is found in the arrangement of the forward seat, which is divided into two parts by the motor bonnet. In order to obtain sufficient room for two persons, the single seats on either side of the bonnet extend over the running boards, and in this manner the body length is shortened by the distance usually given up to the floor space between the dash and seat.

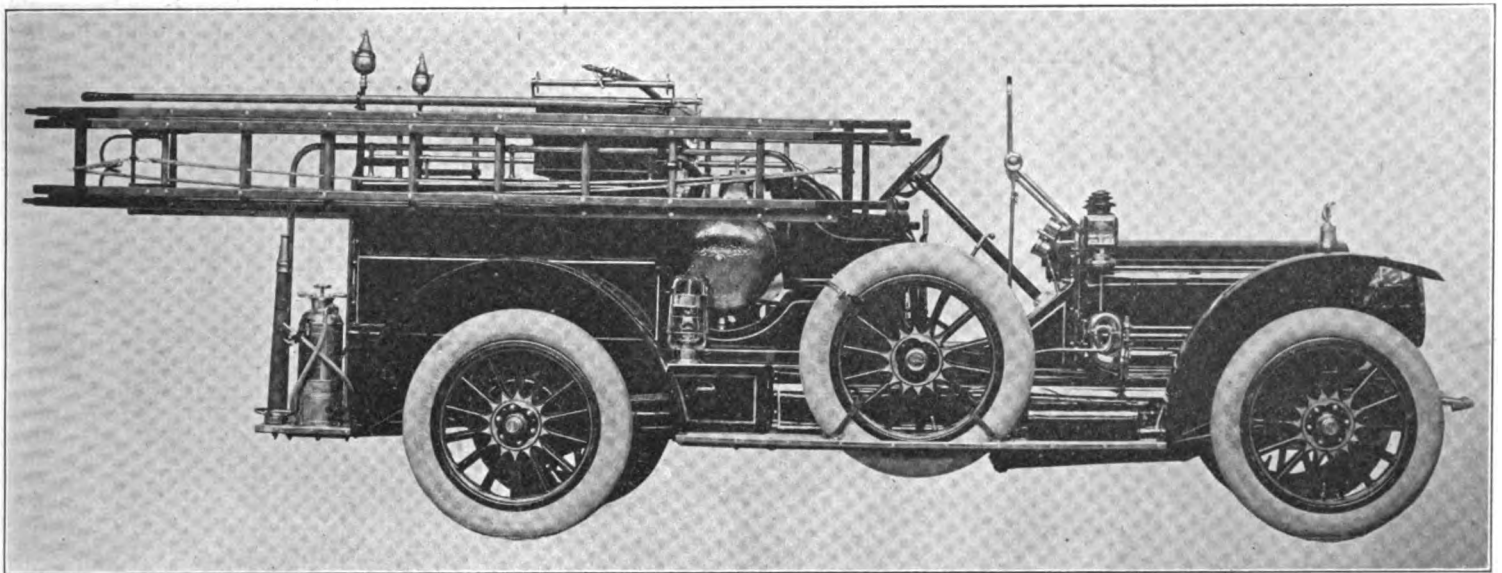
Automobile fire-fighting apparatus is gaining in commercial importance as its efficiency is demonstrated throughout the country in actual practice. Not a few manufacturers are studying its requirements in consequence, with the result that more re-

being attached to the frame at two points to steady the body and prevent excessive side sway. As the weight of the body and load is heavier than that of the touring car, heavier leaves are used than in the pleasure model. The machine is not difficult to identify as a Rambler product, for the Rambler spare wheel is carried in the usual position on the running board at the right of the driver's seat.

Other than the four-wheel-drive Couple-Gear truck, there is but one front-wheel-drive car on exhibition. This is the Rovon car, manufactured by the Kinnear Manufacturing Co. The power plant consists of a horizontal, double-opposed, air-cooled motor placed under the seat and suspended by three lugs from the side members of

ing on a drum bolted to each rear wheel in the usual manner. Each brake might be said to consist of two in one, however, for there are four segments, or shoes, in each drum actuated by two brake arms operated by the same rod from the pedal. Thus a double braking effect is obtained, and as the leverage is 27 to 1, the car can be stopped as quickly as though it were provided with two sets of brakes.

The Couple-Gear car on exhibition could hardly be called a truck, for it partakes more of the nature of a tractor, and yet it does the work of both. This particular model consists of the frame, running gear, power plant, and driver's seat. Instead of a body, a large iron disk is mounted in heavy bearings on the center of the plat-



RAMBLER COMBINATION CHEMICAL AND HOSE TRUCK, SHOWING SPARE WHEEL EQUIPMENT

finer types constantly are being developed. This tendency is well illustrated in the design of the Rambler fire truck, which forms the exhibit of the Thomas B. Jeffery Company. This is a combination chemical wagon and hose cart, and is placed on the model "65" touring-car chassis. The chemical tank has a capacity of 40 gallons, and is supplemented with two hand fire extinguishers located on either side of the rear running board of the body. The fire-fighting ability of the machine is augmented by two ladders, extra nozzles and 800 feet of hose, all of which are stowed compactly, and yet easy of access when needed. There is seating capacity in the body and "hanging" room on the running boards for six or seven men beside the driver.

The motor is rated at 45 horsepower, and is of the same type as that used on the touring car. The final drive is by means of a shaft with the same gear reduction as that found in the pleasure car, and, in consequence, the machine is capable of maintaining a speed of 40 miles an hour. The springs used are of the "¾ elliptic" type, both front and rear, the upper leaves

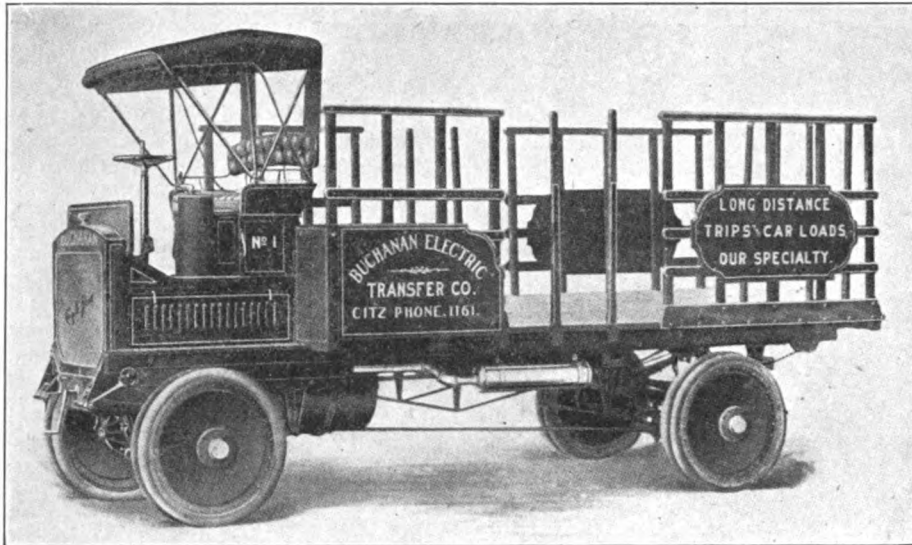
the main frame. The cylinders are 5¼-inch bore by 4½-inch stroke, thus following the tendency toward short strokes in horizontal engines.

A three-speed selective transmission is used, which drives a propeller shaft extending forward from the gear box to the front axle. A differential and worm gear are mounted in the housing of this front axle to transmit the power from the drive-shaft to the front wheels. The live axle is of the full-floating type, and is connected to each front wheel through the medium of a ring joint which replaces the ordinary steering knuckle and enables the front wheels to be swung about a vertical axis without interfering with the power transmission. A floating ring clutch is used between the motor and transmission.

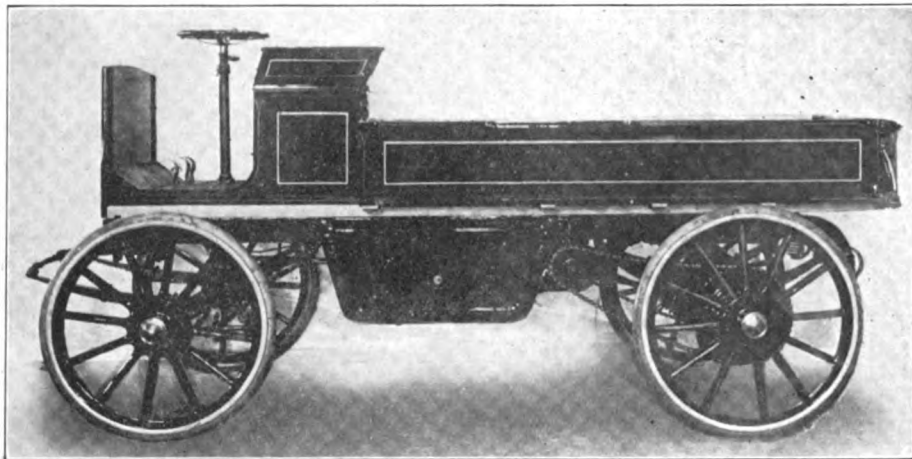
On account of the nature of the drive, the car exhibited is cranked from the rear, but a special attachment consisting of a chain and sprocket may be provided whereby the motor may be started from the front in the usual manner. There is no emergency brake, but the foot brake is of the internal expanding type operat-

form and is bolted to a cross member. On this disk is to be set the front of any heavy truck, fire engine, or work wagon of the horse-drawn variety. Thus it will be seen that this truck is designed to replace the front wheels of any horse-drawn vehicle and to change the motive power from animal to mechanical.

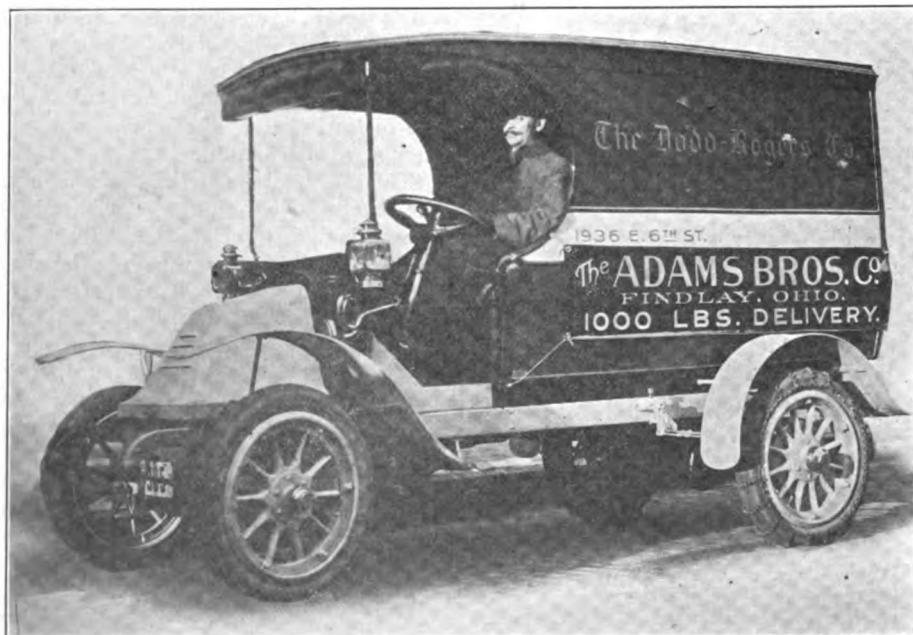
The power plant of this tractor, or truck, consists of a four-cylinder, "T"-head motor, measuring 5¼ inches bore by 6 inches stroke, placed under the floor boards and driver's seat. Directly connected to the rear end of the crank shaft and set in a sub-frame supported from cross members is a 26 kilowatt, direct-current generator. The power from this generator is used to drive an electric motor encased in each of the four rear wheels. An electric controller mounted in front of the driver replaces the transmission, and serves to communicate six forward and an equal number of reverse speeds to each of the driving motors. The gasoline motor is controlled by the throttle, and the position of the controller handle need not be changed for either level or hill work, as the electric



COUPLE-GEAR GASOLINE-ELECTRIC FREIGHT TRUCK



THE SIMPLE SCHMIDT 1,000-POUND DELIVERY WAGON



ADAMS 1,000 POUND DELIVERY WAGON WITH LEFT DRIVE

generator and motors adapt themselves automatically to any load.

All wheels are of the twin rim type, and each is composed of two disks of pressed steel, between which the motor is located. The motors are all of the same size, design and power, and their armatures are placed in a horizontal position and extend diametrically across the axis of the wheel to opposite sides of the inside of the rim. To the inside of each disk is mounted a circular gear rack and each of these meshes with a driving pinion that is keyed to each end of the armature shaft. In order to allow each pinion to engage only with its own rack, the armature is turned through a slight angle in a horizontal plane, and thus each pinion meshes with the rack opposite to that engaged by the other pinion. The axle stubs on which the wheel turns are integral with the motor casting on the inner steel disc, and an elongation of the inside stub is keyed in a taper sleeve in the steering knuckle. This design serves to hold the motor in a fixed horizontal position while the wheel revolves around it.

The truck is steered by all four wheels, the rear ones being turned by a worm and sector gear connected to each and operated by shafts extending from the front wheels. Both mechanical and electric brakes are provided, the former being operated by a pedal and the latter by the controller handle.

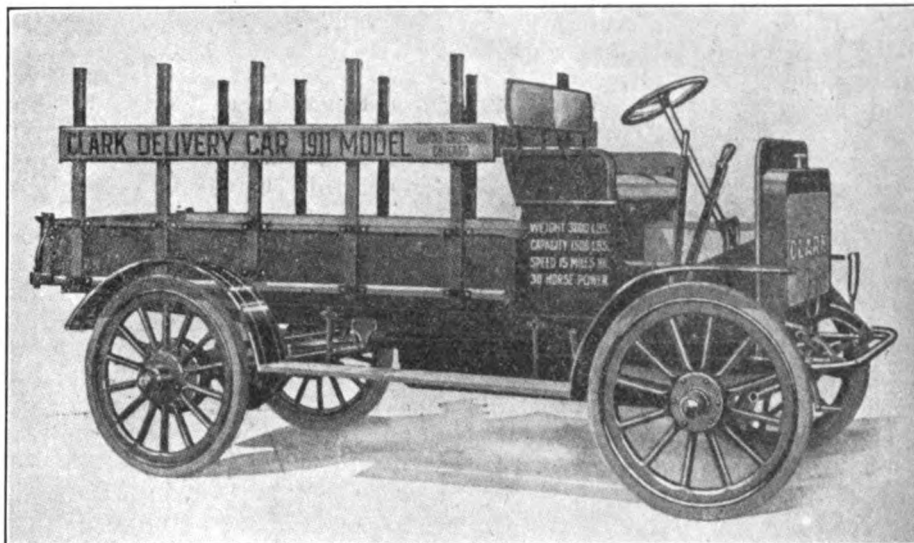
A horizontal, double-opposed, air-cooled motor also constitutes the power plant of the Schmidt delivery trucks. These trucks are made in two sizes, one of 1,000 pounds capacity, and the other designed for double this load, but the general lines of the chassis and power plant are the same for both models. The motor rests under the middle of the frame on a platform that is supported on two drop members, one being riveted to one side of the frame, and the other to the opposite side. The piston travel is in the line of the wheelbase of the car, and consequently the carburettor and timer are rendered accessible from the side of the supporting frame, inasmuch as the motor is placed slightly to one side, so that the end of the crankshaft projects out slightly beyond the left-hand frame member. A planetary transmission is used, and the drive is by means of a single chain to the jackshaft and sprockets, from which the power is carried to the rear wheels by double side chains. The rear springs are semi-elliptic, while those at the forward end of the frame are three-quarter elliptic. A notable feature of the Schmidt production is the absence of control levers at the side of the driver's seat and on the steering wheel. There is a set spark, the throttle is controlled by a foot accelerator, and the brakes are operated by a single pedal. This leaves only the transmission lever to be accounted for,

and as this is placed in a horizontal position under the steering wheel, the driver's seat may be entered from either side of the vehicle.

Four-cylinder, block motors seem to be finding their way into the delivery car and light truck field, and several of the new cars on exhibition were equipped with this form of power plant. The block motor of the Adams one-ton truck measures $3\frac{3}{4}$ inches bore by 5 inches stroke, while the power plant of the 1,000-pound chassis consists of a two-cylinder engine of exactly the same design and dimensions as the more powerful machine. The wheelbase of the larger car is 120 inches, and the frame is of channel section narrowed at its forward end where the motor is set on a sub-frame that is riveted to dropped cross-members. The three-speed, selective transmission, jackshaft and differential are mounted on another cross-member that is dropped to allow of straight-line drive between the motor and transmission. The final drive is by means of the usual double side chains to the rear wheels. Although the cooling water is circulated by a centrifugal pump, the radiator is mounted directly in front of the dash and behind a motor bonnet that is similar in shape to those used over some of the well-known engines employing the thermo-syphon system. The radiator is mounted on coil springs attached to the frame, and semi-elliptic springs are used on both front and rear axles. All models of this make are equipped with left-hand drive and right-hand control.

One of the interesting features of the 1,500-pound Clark power wagon lies in the design of the driveshaft and universal joint connecting the clutch with the transmission. The horizontal, double-opposed motor is placed under the driver's seat, and the three-speed, sliding transmission is housed in a casting integral with the differential and jackshaft casing. The cone clutch is but a short distance from the forward end of the transmission case. Instead of interposing a shaft or ordinary universal joint to connect the ends of the clutch and transmission shafts, the clutch sleeve is used to form a part of a jaw joint. The jaws of this joint are cut considerably smaller than the corresponding recesses in the other half of the joint on the transmission shaft, and this space is filled on each side of each jaw with a brass web of special construction. The flanges of this brass web are sufficiently flexible to allow for the small amount of bending that may be communicated to the shaft, and yet the space is filled so that there is no noise or lost motion on straight drive.

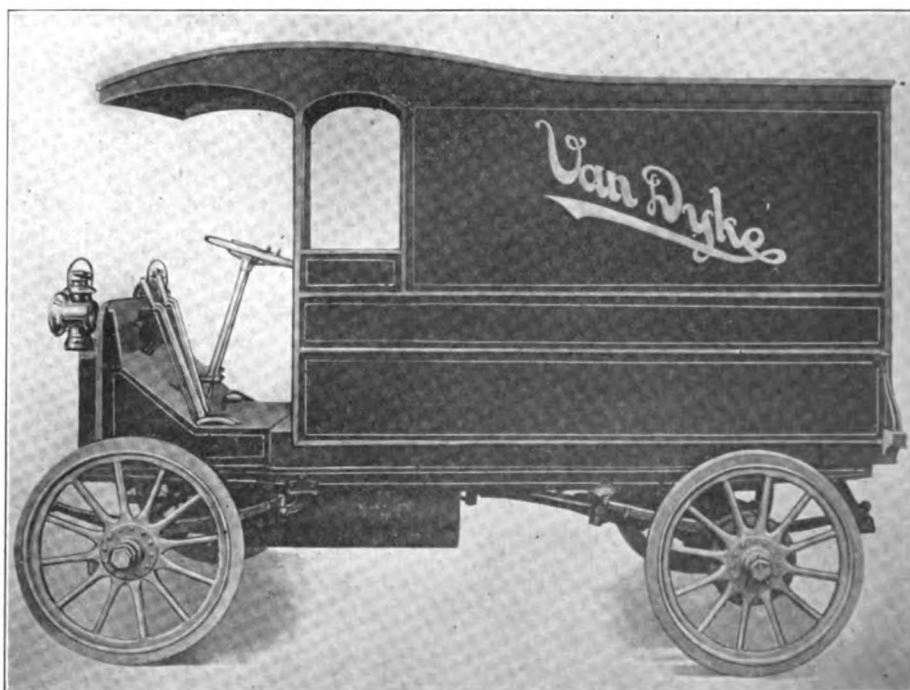
The motor cylinders are not provided with an exhaust manifold, but the exhaust from each is led through a separate pipe to a single muffler slung under the rear



THE 1,500-POUND 30 HORSEPOWER CLARK DELIVERY CAR



STERNBERG 1½-TON TRUCK WITH STAKE BODY



VAN DYKE FRICTION DRIVE 1,000-POUND DELIVERY WAGON

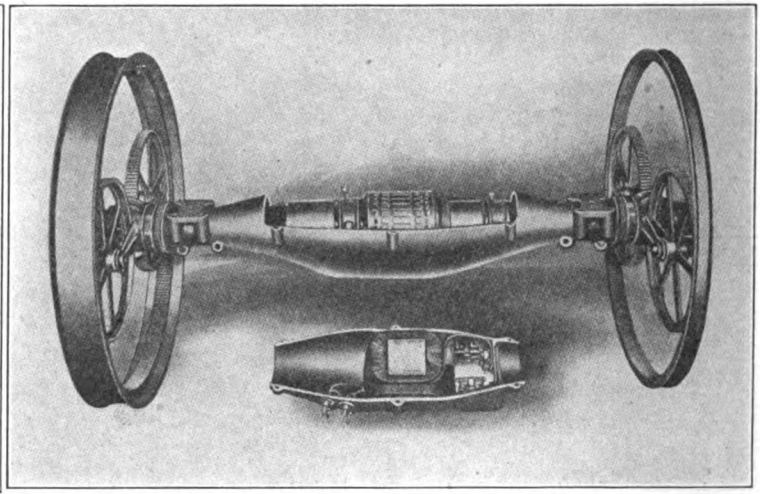
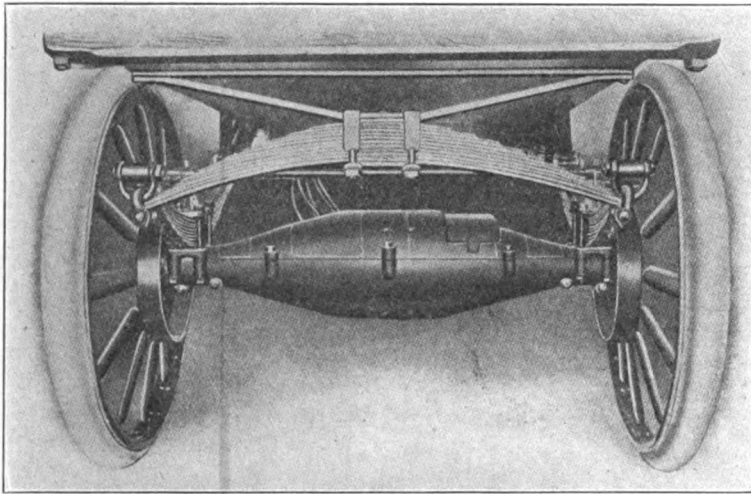
portion of the frame. The exhaust pipe from the cylinder on each side of the motor enters the muffler at its respective end, and the expanded gases are then discharged through a common outlet at the middle of the muffler casing. This car also is left-hand drive and control.

The Sternberg two-ton truck, which employs a wood frame, reinforced with pressed steel, is one of the largest vehicles using a horizontal, double-opposed motor, but the $5\frac{1}{2}$ -inch bore and 5-inch stroke of the cylinders furnish ample power to drive the vehicle at the rate of 15 miles an hour. The motor is placed under the floor boards, and is suspended on lugs that rest on the main frame. The three-speed, selective transmission is mounted on a sub-frame,

through this passes one portion of the double-drive shaft. The inside ends of the two portions of the driveshaft terminate in the differential, to which the end of the armature shaft also is keyed. Thus the hollow armature shaft merely allows one part of the driveshaft to pass through it, and in no way forms a support or bearing for the latter. To each outside end of the shaft is keyed a driving pinion that revolves in the hub of the wheel. A large annular gear is attached to the inside of the outer pressed-steel disk of each of the 42-inch rear wheels. The power is transmitted from the driving pinion to the internal gear by means of two intermediate gears, each of which just fills the space between the faces of the pinion and annular gear. These intermediate gears are

der the seat. The drive from the transmission to the rear wheels on both of these wagons is by means of a jackshaft and double side chain. The 1,500-pound wagon uses a planetary transmission, while the larger machine employs one of the three-speed, selective type.

An air-cooled, four-cylinder, opposed motor developing 25 horsepower forms the power plant of the Independent Harvester Co.'s high-wheel vehicle, and is strongly suggestive of the engine formerly used in the Holsman car—a circumstance that is explained by the fact that Henry K. Holsman, formerly designer and builder of the car that bears his name, is the engineer of the Plano (Ill.) concern. The motor is suspended from steel slides set in the main



WALKER BALANCE GEAR REAR AXLE COMPLETE AND DISMANTLED TO SHOW CONSTRUCTION

and the rear end of the gear case is bolted to the differential housing, which is a one-piece casting that rests in brackets bolted to the side members of the main frame. Final drive is obtained by means of the usual double side chains. The truck is provided with semi-elliptic springs in front and with those of the platform type at the rear.

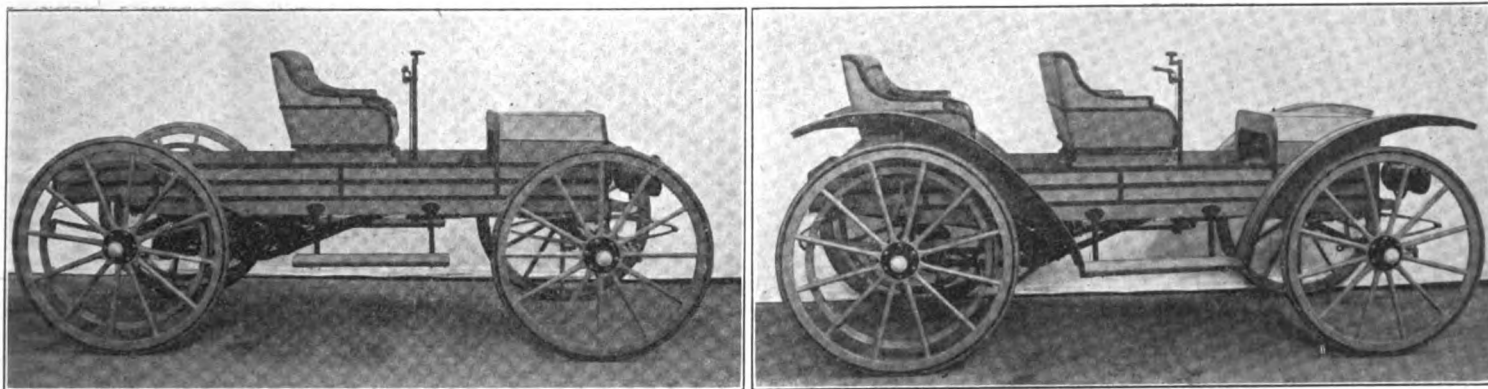
There are many electric commercial cars on exhibition, but only one of these is of a make that was not shown at Madison Square Garden. This exception, and one which is consequently more or less of a novelty in the eastern part of the country, is the Walker balance gear electric truck, staged by the Automobile Maintenance & Mfg. Co. The name is obtained from the manner in which the motor and driveshafts transmit their power to the rear wheels.

All four wheels are made of double disks of pressed steel and the rear pair contain the pinions and gears that transmit the power from the driving shaft. But one motor is used, and this is encased in the rear axle housing, which also encloses the differential and double-drive shaft. The armature shaft of the motor is hollow, and

diametrically opposite the pinion, and are set on a stationary, double-forked yoke that is kept from revolving by a feather key, and is virtually the rear axle stub upon which the rear wheels revolve. Thus the entire motor, differential, shafts and reduction gears are housed in the single rear axle casing and the four disks forming the two rear wheels. Any part of the mechanism may be easily reached, however, by removing the top of the motor casing, or the outside disk of either wheel. Any style of batteries will be furnished, but the transmission system is of the same design, whether a 1,500-pound wagon or a three-ton truck is desired. The battery equipment consists of 42 cells of 11 plates for the heavy truck, and 42 cells of 9 plates each for the light machine. The body is supported at the rear on platform springs.

The tendency among many of the manufacturers of delivery wagons having a horizontal, double-opposed power plant seems to be to make the bore of the motor greater than its stroke. This is the case with the Chicago Commercial car, the one-ton model of which is driven by a $5 \times 4\frac{1}{2}$ -inch motor suspended on a sub-frame un-

der the seat. The crankshaft projects out through the case on both sides, and to each end a small pulley is keyed. These pulleys revolve but a few inches distant from and in the same plane with a larger grooved pulley that is attached to the inside of each rear wheel. A friction chain passes around each pair of pulleys, and by means of these the power is transmitted from the motor to the rear wheels. By operating a pedal set in the floor near the driver's seat, the grooves of the small driving pulleys are separated, and the chain of each comes into contact with a smaller pulley inside of the first, thus reducing the gear ratio between the crankshaft and the rear wheels. The tension of the chain on both pulleys is obtained by means of springs operating on the motor which tend to make it slide as far forward in its guides as the chains will permit. The car is reversed by sliding the motor back in the guides from which it is suspended until a secondary grooved pulley attached to each extreme end of the crankshaft comes in direct contact with the periphery of the driving wheel, and as by this time the chains will be loosened so that they slip



INDEPENDENT HARVESTER UTILITY MODEL, SHOWING BODY CONVERTIBILITY AND PECULIAR TRANSMISSION

on the pulleys, the friction of these other sheaves will tend to revolve the wheels in the opposite direction.

The exhaust manifold, pipe and muffler are carried directly on the motor, and move with it when the power plant is slid in its guides to change from reverse to forward speed, and vice versa. Consequently, no jointed connections are necessary, as the gasoline is fed to the carburetter through a flexible pipe. The entire travel of the motor on its guides is not over three inches, and the reverse is obtained by a horizontal hand lever that projects from the steering post. When this handle is released the motor is forced back by its springs into the position that it assumes on the high speed, and this is the case also when the foot is removed from the pedal operating the low gear. The car is steered by means of a horizontal lever, and the throttle is controlled by turning

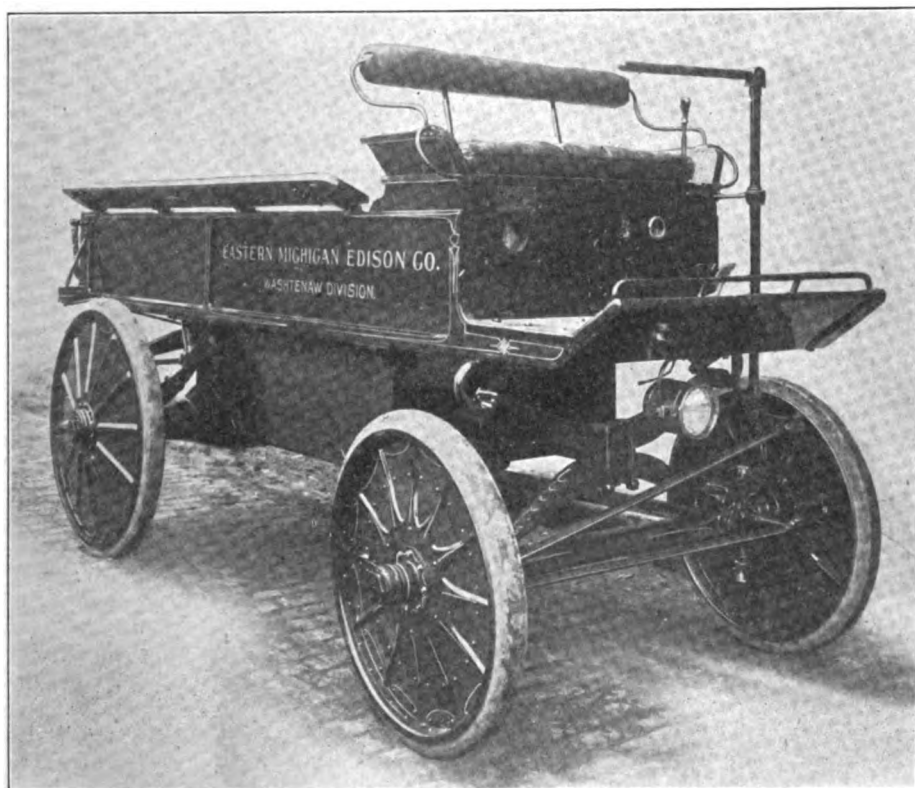
the grip of this steering handle in much the same manner as the speed of the ordinary motorcycle is regulated. The steering column is placed in a vertical position, and rises from the center of the floor boards in front of the driver's seat. Both the reverse and the steering handles are hinged, and as there are no side levers, the car may be operated from either side of the front seat by merely swinging the levers through a vertical plane so that they rest on the proper side of the steering column. The fuel and oil tanks are carried under a front hood, and as an extra seat may be attached to the express body with which the machine is ordinarily provided, its conversion from a business wagon to a touring automobile is a matter of but a few moments.

A method of motor suspension different from many of its class is that employed in

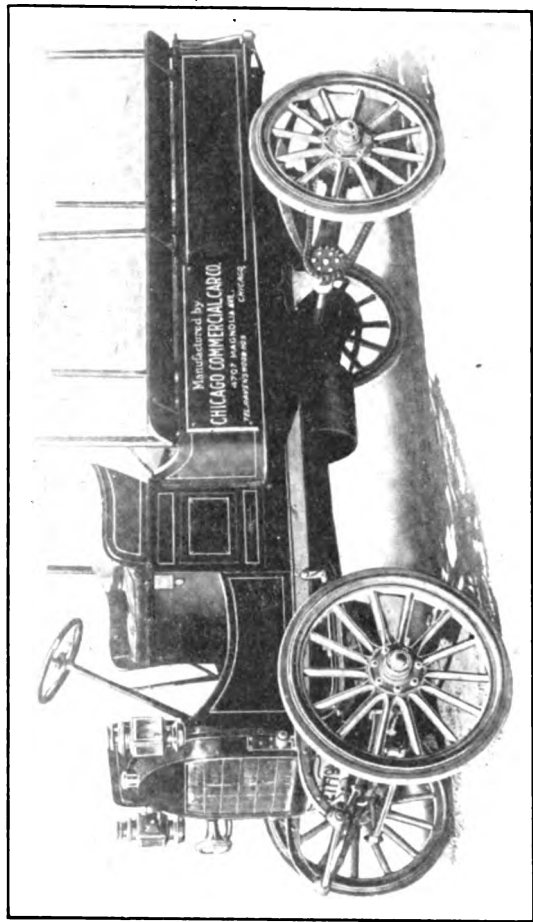
the Economy truck. This truck is designed with its power plant located under the front floor boards, but instead of dropping the forward portion of the main frame in order thus to accommodate the motor, the latter is slung in a support suspended from the channel sections, which are straight throughout the entire frame. By loosening two heavy bolts and uncoupling the shaft from the transmission, the motor may be let down and removed entirely. The horizontal, double-opposed motor is air cooled, and set with its cylinders extended lengthwise with the wheelbase of the car. Three sizes of chassis are made with carrying capacities of from 800 pounds to one ton, and some of the later models are provided with water-cooled motors.

A design which makes this car different from many of the others on exhibition is found in the arrangement of the springs. These are of the full-elliptic type, both front and rear, but the frame suspension at the forward portion consists of but a single spring resting on the axle and parallel with it. In order to furnish a sufficiently rigid connection between the body and the front axle, which otherwise would be insufficient with but this single point of support, two radius rods are provided. One of these is placed on each side, and each extends from an extremity of the front axle to a bracket riveted to the forward half of the main frame and projecting down from it. In several of the models the springs hold the frame, when unloaded, about on a line with the top of the wheels, and on account of this feature and the small amount of vertical space occupied by the power plant, the clearance is never less than the height of the axles above the ground. The transmission is of the selective type, and the drive is by means of a single chain to the jackshaft and differential, and thence by double side chains to the rear wheels.

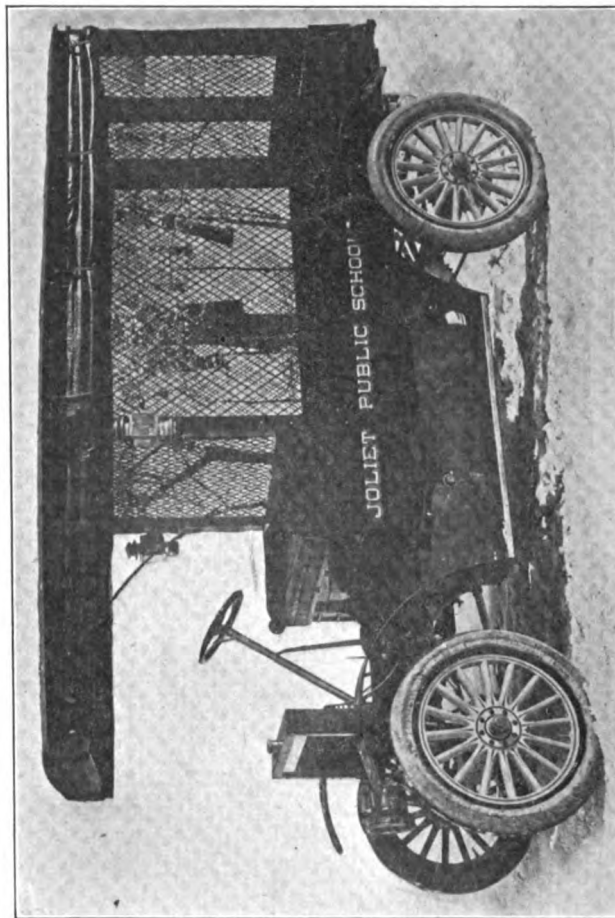
Another delivery car having its horizontal, double-opposed power plant placed under the floor boards is the Mercury, but this is different from most of the other vehicles of the same general type, in that its motor is air-cooled and is provided with automatic inlet valves. The cylinder heads



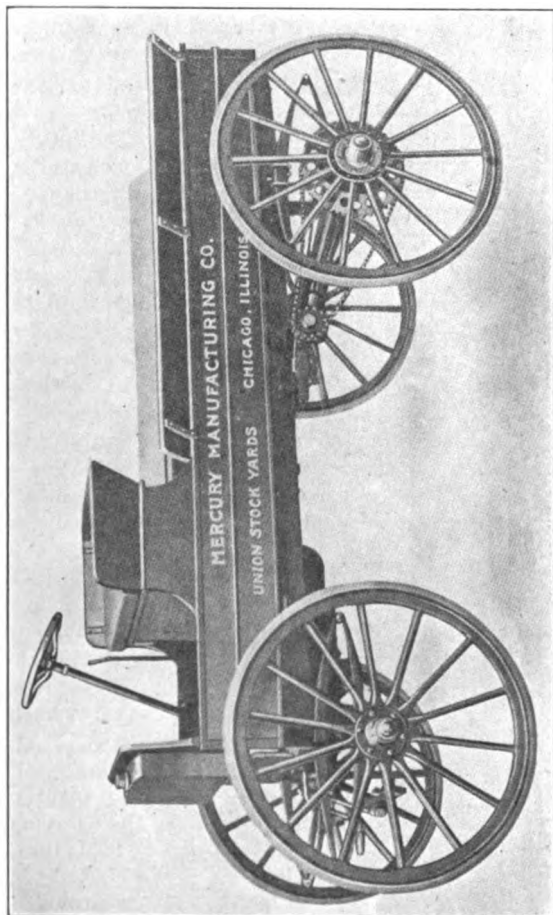
THE WALKER BALANCE GEAR ELECTRIC DELIVERY WAGON



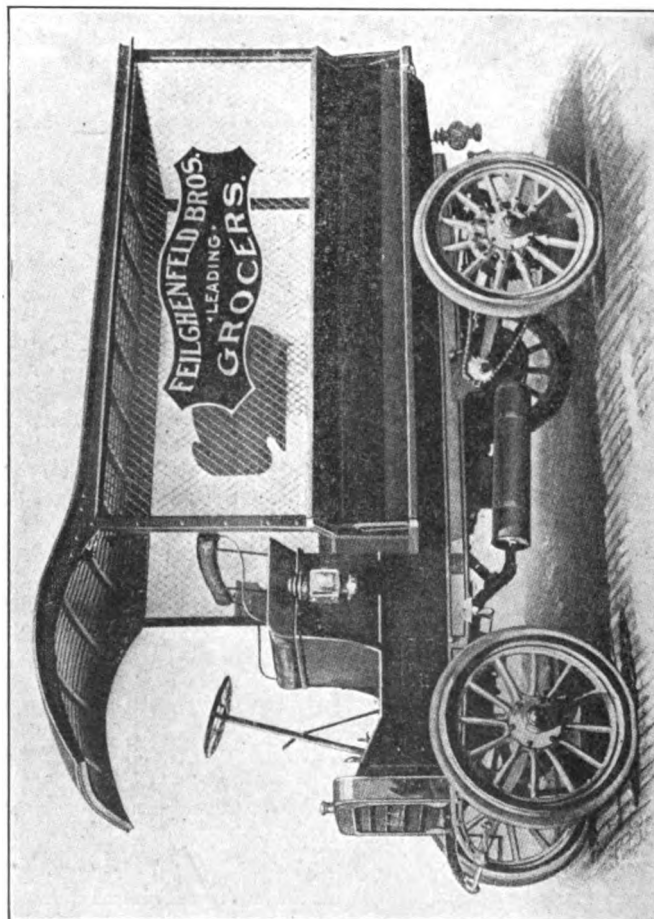
CHICAGO COMMERCIAL CAR CO.'S HEAVY DELIVERY WAGON



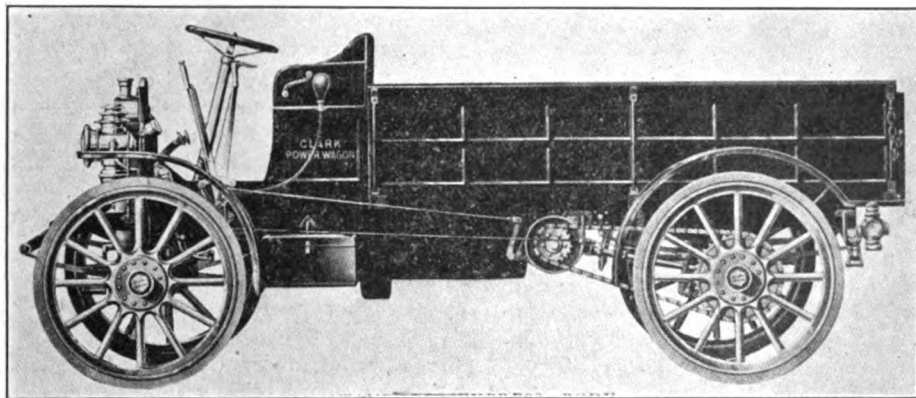
THE ECONOMY LIGHT DELIVERY WAGON WITH SPECIAL BODY



THE NEW MERCURY LIGHT DELIVERY WAGON



MARQUETTE MODEL B EQUIPPED WITH SCREEN BODY



THE SUBSTANTIAL-LOOKING CLARK POWER WAGON

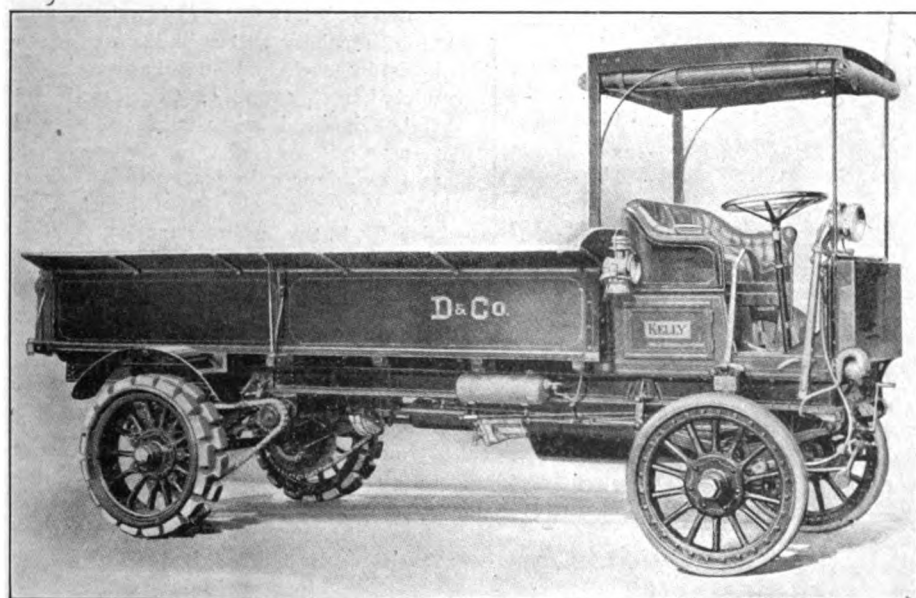
of this motor are removable. Another unusual feature of this car lies in the design of the planetary transmission control. But one lever is used, and this is placed at the side of the car and controls the reverse, neutral and first and second forward speeds in consecutive progressive positions.

While many of the trucks on view are of comparatively recent origin, it is noteworthy that several of those that are making their first appearance for the year are of tried and proven character. One of this type is the Kelly truck, formerly known as the Frayer-Miller, which is distinguished by an original air-cooling system and one that has been retained practically without change for more than six years. As is well known, the method employed is that of forcing air through light metallic jackets surrounding the cylinders, the entire wall surface being bathed in the draught which flows over the heads and is discharged at the open lower ends of the jackets. The "squirrel-cage" type of blower now is used to maintain circulation, while the respective sectional areas of the distributing pipe above the various cylinders are such as to

ensure uniform distribution of the air. The engine is of the valve-in-the-head type, the form of the cylinders, however, being such that the valves open horizontally instead of vertically, a clean combustion chamber with ample cooling surface thereby being secured.

Kelly trucks are made in two and three ton models, and are equipped with special types of body to accommodate them to various classes of service. The general chassis construction is not unusual, transmission being by means of Hele-Shaw clutch, four-speed selective gearset, and double-chain drive. Semi-elliptic front springs and three-quarter platform rear, jack shaft service and rear wheel emergency brakes and Timken axle equipment are other of its approved features.

Because of its extreme simplicity and low maintenance cost, many authorities exhibit a strong leaning toward the friction disk type of transmission. The principle is applied to cars of both light and heavy construction in the commercial vehicle field, one of its exponents in the former class being the Van Dyke, which is



THE KELLY THREE-TON HEAVY EXPRESS WAGON

making its bow to the 1911 showgoer in the Coliseum. The chassis is intended for delivery purposes, and with this intent may be equipped with various styles of body; the stock model, however, being of the covered type and of ample proportions considering the size of the chassis. The limiting capacity is 1,000 pounds, which is all that an ordinary delivery system should require for the individual load.

The machine is equipped with a 22 horsepower two cylinder motor, which is of the long-stroke type, its cylinder dimensions being $4\frac{1}{2} \times 6$ inches. The final drive from the driven disk is by propeller shaft, to the semi-floating rear axle. Speed control is vested in one side lever and a foot pedal. The chassis is mounted on semi-elliptic and three-quarter platform springs, front and rear, respectively, and has a ball-bearing front axle, the rear axle being carried on Hyatt roller bearings.

SUMMARY OF TRUCK EXHIBITS.

Abresch-Cramer Co., Milwaukee, Wis.—

One Abresch four cylinder chemical fire truck and one three ton chassis.

Adams Bros., Findlay, O.—One Adams

two cylinder 1,000 pound delivery wagon, one four cylinder 30 horsepower pleasure car, one four cylinder one ton chassis and one two cylinder 1,000 pound chassis

Alden Sampson Mfg. Co., Detroit, Mich.—

Six Sampson trucks. Two 1,000 pound two cylinder 18 horsepower delivery wagons, one each four cylinder 25 horsepower one ton truck, 33 horsepower two ton truck, 33 horsepower three ton truck, 40 horsepower four ton truck and one five ton chassis.

American Locomotive Co.—One Alco four

cylinder three ton truck and one each four cylinder three and five ton chassis.

Anderson Electric Car Co., Detroit, Mich.

—Three Detroit electric delivery wagons.

Atlas Motor Car Co., Springfield, Mass.—

Two Atlas two cylinder two cycle commercial cars. One each 1,500 pound delivery wagon, taxi cab and taxi cab chassis. Automobile Maintenance & Mfg. Co., Chicago, Ill.—Two Walker electric delivery wagons.

Avery Co., Peoria, Ill.—Four Avery four

cylinder trucks. Two three ton city trucks, one two ton city truck and one three ton farm tractor.

Baker Motor Vehicle Co., Cleveland, O.—

Two Baker electric trucks, one each 1,000 pound delivery wagon and three ton truck.

Brodeser Motor Truck Co., Milwaukee,

Wis.—Two Brodeser four cylinder trucks. One each two and three ton trucks and one two ton chassis.

Brush Runabout Co., Detroit, Mich.—Two

Brush single cylinder closed delivery wagons.

Buick Motor Co., Flint, Mich.—Three

Buick trucks. Two two cylinder 1,500

THE MOTOR WORLD

pound delivery wagons and one four cylinder one ton truck.

Cartercar Co., Pontiac, Mich.—Two Cartercar two cylinder 1,500 pound delivery wagons.

Chicago Commercial Car Co., Chicago, Ill.—Two two cylinder trucks. One each 1,500 pound delivery wagon and one ton truck.

Clark Delivery Car Co., Grand Crossing, Ill.—One Clark four cylinder 1,500 pound delivery wagon and one chassis.

Clark Power Wagon Co., Lansing, Mich.—One Clark two cylinder 1,500 pound delivery wagon.

Couple-Gear Freight Wheel Co., Grand Rapids, Mich.—One couple-gear four cylinder ten ton four wheel drive and four wheel steering truck chassis.

Dart Mfg. Co., Waterloo, Ia.—One two cylinder 1,000 pound delivery wagon.

Dayton Auto Truck Co., Dayton, O.—One Dayton four cylinder three ton truck chassis.

Economy Motor Car Co., Joliet, Ill.—Two Economy two cylinder air cooled trucks. One each 1,000 pound delivery wagon and one ton truck.

Federal Motor Truck Co., Detroit, Mich.—One Federal four cylinder one ton truck and one chassis.

Franklin Mfg. Co., H. H., Syracuse, N. Y.—Five Franklin four cylinder air cooled commercial cars. Two one ton trucks and one each ambulance, 1,000 pound delivery wagon and taxi cab.

Garford Co., Elyria, O.—Two Garford four cylinder trucks. One each two and three ton trucks and one chassis.

General Vehicle Co., Long Island City, N. Y.—Two General electric delivery wagons.

Grabowsky Power Wagon Co., Detroit, Mich.—Two Grabowsky two cylinder three ton trucks and one chassis.

Harder's Fireproof Storage & Van Co., Chicago, Ill.—One Harder four cylinder one and one-half ton truck and one three ton chassis.

Independent Harvester Co., Plano, Ill.—Two four cylinder opposed air cooled 1,000 pound delivery wagons.

Jeffery Co., Thos. B., Kenosha, Wis.—One four cylinder combination chemical fire engine and hose wagon.

Kelly Motor Truck Co., Springfield, O.—Three Kelly four cylinder trucks. Two three ton trucks and one two ton truck.

Kinnear Mfg. Co., Columbus, O.—One Rovon two cylinder front drive 1,500 pound delivery wagon.

Kissel Motor Car Co., Hartford, Wis.—Three Kissel four cylinder commercial cars. Two three ton trucks and one ambulance.

Knox Automobile Co., Springfield, Mass.—Two Knox commercial cars. One four cylinder police patrol wagon, one six cylinder combination pumping and chem-

ical fire engine and one four cylinder five ton truck chassis.

Lansden Co., Newark, N. J.—Six Lansden electric commercial cars.

Mack Bros. Motor Car Co., Allentown, Pa.—Five Mack four cylinder trucks. Two one ton trucks and three five ton trucks.

Mais Motor Truck Co., Indianapolis, Ind.—Two Mais four cylinder trucks. One each one and one-half and two ton trucks.

Marquette Motor Vehicle Co., Chicago, Ill.—Two Marquette two cylinder trucks. One each one and one-half ton trucks.

McIntyre Co., W. H., Auburn, Ind.—Two

CENSUS OF THE SHOW.

Total Exhibitors	212
Exhibitors of Vehicles.....	59
Exhibitors of Accessories.....	134
Exhibitors of Motorcycles.....	19

GASOLINE COMMERCIAL VEHICLES.

One Cylinder	4
Two Cylinder	33
Two Cylinder (2 cycle)...	1
Four Cylinder	55
Four Cylinder (2 cycle)...	1
Electric	22
Gasoline-Electric	1

Total Commercial Vehicles..... 117

PUBLIC SERVICE VEHICLES.

Gasoline:

Two Cylinder (2 cycle)...	1
Four Cylinder	7
Six Cylinder	1

Total Public Service Vehicles... 9

CHASSIS.

One Cylinder	1
Two Cylinder	4
Two Cylinder (2 cycle)...	1
Four Cylinder	20

Total Chassis	26
Air Cooled Vehicles.....	15
Water Cooled Vehicles...	90
Pleasure Cars	1

Total All Vehicles..... 127

McIntyre two cylinder commercial cars. One one ton water cooled truck and one 1,000 pound air cooled delivery wagon.

Mercury Mfg. Co., Chicago, Ill.—Three Mercury two cylinder air cooled 1,000 pound delivery wagons.

Metzger Motor Car Co., Detroit, Mich.—Two Hewitt four cylinder trucks. One each one and ten ton trucks.

Monitor Automobile Works, Janesville, Wis.—Two Monitor two cylinder commercial cars. One one ton truck, one bus and one chassis.

Morgan Co., R. L., Worcester, Mass.—One Morgan four cylinder five ton truck.

Packard Motor Car Co., Detroit, Mich.—Five Packard four cylinder commercial cars. One each three ton ice wagon and express wagon, one each combination chemical and hose wagon, police patrol wagon and panel top delivery wagon and one chassis.

Peerless Motor Car Co., Cleveland, O.—One Peerless four cylinder four ton truck and one chassis.

Pierce-Arrow Motor Car Co., Buffalo, N. Y.—One Pierce-Arrow four cylinder five ton truck chassis.

Randolph Motor Car Co., Chicago, Ill.—One Randolph two cylinder one ton truck.

Rapid Motor Vehicle Co., Pontiac, Mich.—Three Rapid trucks. One each one and three ton trucks, one two ton truck chassis and one two cylinder one ton truck.

Reliance Motor Truck Co., Owosso, Mich.—One Reliance four cylinder two cycle five ton truck and one each four cylinder four cycle three, four and six ton truck chassis.

Reo Motor Truck Co., Lansing, Mich.—Two Reo single cylinder delivery wagons. One each 500 and 1,500 pound delivery wagons.

Saurer Motor Truck Co., New York City—One Saurer four cylinder four and one-half ton truck and one six ton chassis.

Schacht Motor Car Co., Cincinnati, O.—Two Schacht four cylinder 1,500 pound delivery wagons.

Schmidt Bros. Co., Grand Crossing, Chicago, Ill.—Two Schmidt F. C. S. two cylinder air cooled delivery wagons and one chassis.

Stearns Co., F. B., Cleveland, O.—One Stearns four cylinder five ton truck.

Sternberg Mfg. Co., Milwaukee, Wis.—One Sternberg two cylinder one and one-half ton truck and one chassis.

Studebaker Automobile Co., South Bend, Ind.—Six Studebaker trucks. Three electric trucks, one electric delivery wagon and two four cylinder gasoline trucks.

U. S. Motor Truck Co., Cincinnati, O.—Two U. S. two cylinder trucks. One each one and one-half ton trucks.

Van Dyke Motor Car Co., Detroit, Mich.—One Van Dyke two cylinder 1,000 pound delivery wagon.

Waverley Co., Indianapolis, Ind.—Three Waverley electric delivery wagons.

White Co., Cleveland, O.—Five White four cylinder trucks. Two one and one-half ton trucks, one 1,500 pound delivery wagon and one each three ton dump wagon, brewery wagon and chassis.

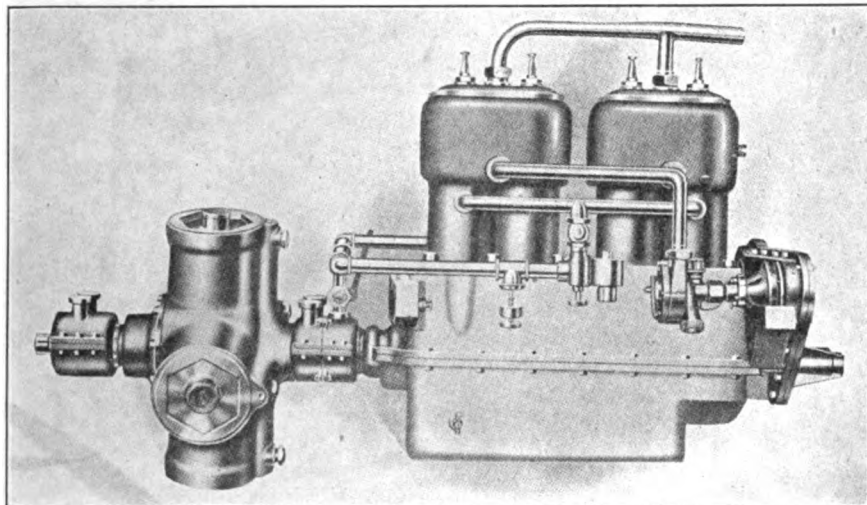
Willys-Overland Co., Toledo, O.—Three Overland four cylinder trucks. Two 1,000 pound delivery wagons and one one ton truck.

Radical Power Plant Appears Among Accessories at Chicago Show

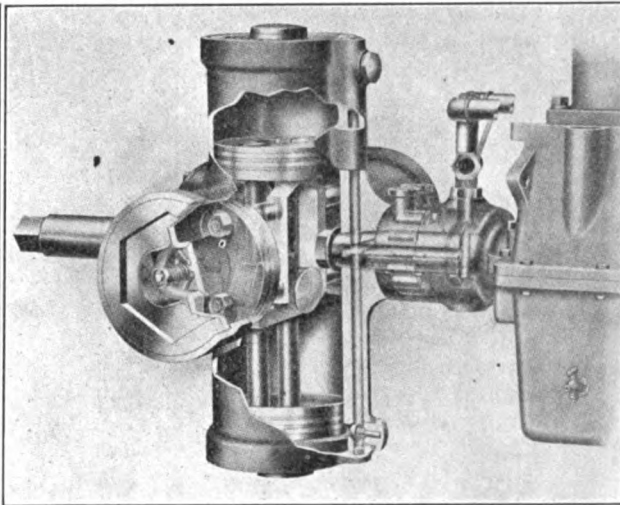
In the shake-up which the show received between last Saturday night and Monday morning of this week, a marked change was wrought in the accessory sections of the show as well as on the floor of the Coliseum. Naturally all accessory exhibitors who were located in the Armory last week were forced to move, as the Armory has been closed during the second section of the show. Some of them moved over

which is exhibiting one of the most remarkable special products at the show, namely, a rear axle that has been built for a 20 ton truck that is to be used in the mining industry in the desert region of the Far West. Aside from its mammoth proportions the axle is a notable achievement in its way, since it is destined for a vehicle of a size which only a year or two ago would have been considered utterly im-

possible, and which is based on the E. S. Church patents. The system, which is so devised as to yield a wide range of engine flexibility, comprises a method of external compression in which the actual air pressure attained is governed by the load. In consequence of this provision, it is claimed that the engine may be installed successfully in a car that has no transmission gearing other than that which is necessary



THE RADICAL CHURCH EXTERNAL-COMPRESSION MOTOR

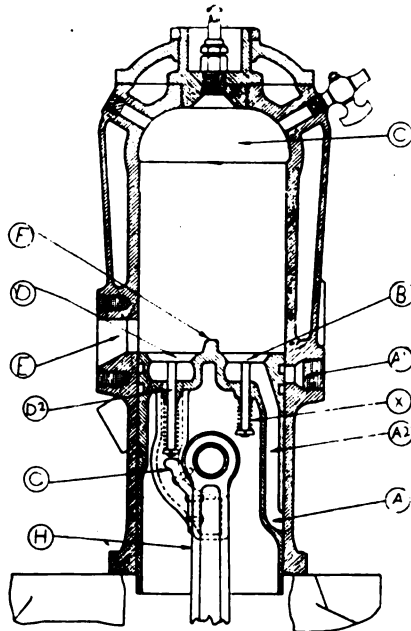


SECTIONAL VIEW OF AIR-CONTROLLER

into new spaces in the Coliseum and some went home; along with them went a number of those who had had exhibits in the Coliseum gallery and the second floor of the Annex. But while the parts, accessory and materials people were moving out in shoals a few others were coming in to fill vacant spaces, so that when the doors were opened admitting the public to Part II there still remained a healthy and lively display of important incidentals. In all, there are 129 exhibits of accessories as against 176 last week. In Part I of the New York show there were 329 of such exhibits and in Part II, 253.

Among the few newcomers are several that exhibited in the New York show but that did not arrive in season for the first week and several who are exhibiting here for the first time. In the latter class are the Eagle Co., of Newark, N. J., which is showing its line of windshields with appropriate refinements rendering the various types suitable for attachment to and use with the newer styles of body construction; the Cleveland-Canton Spring Co., with sundry revised types of suspension for vehicles of varied types and purposes, and the Hayes Wheel Co., which, in addition to its products designed for the lighter pleasure cars has a special department devoted to the production of wheels for commercial vehicles of large and small size. There is also the Sheldon Axle Co.,

practicable and which, even in the present day when ten ton vehicles are in practical use, still must be considered one of the marvels of the industry.



CHURCH CYLINDER DESIGN

By far the most striking novelty of the show from the engineering point of view is the new motor which has been developed by the Automatic Motor & Engineering

to secure the forward and reverse speeds.

The function of compression, as ordinarily carried out within the working cylinder of a four-cycle engine on alternate strokes, in the Church system is performed by a four-cylinder compressor, which is termed a controller, and which also fulfils the purpose of the ordinary flywheel. To summarize the action of the system it may be explained that pure air is compressed in the air controller and fed to the cylinders, being carburetted in the manifolds by means of an atomizing device which sprays the charge of fuel into it. The working cylinders act on a modified two-stroke cycle, in which a certain amount of super-compression, auxiliary exhaust and scavenging are introduced. Governing, as already has been implied, is secured by varying the compression. The latter feature, in fact, is the most radical of the system and is really the key-note of its entire operation.

The controller consists of a group of four cylinders, cast in two opposed pairs and mounted on an extension of the crank shaft, within which are two piston groups, each group consisting of a pair of pistons for opposite cylinders, positively connected and actuated by means of Scotch yokes and a single eccentric. The automatic air inlets to the cylinders are mounted in the heads, but the exhausts are cored out of the main casting and lead to the

central boss, where a short stationary drum, which is suitably packed at the joints surrounding the boss, collects the compressed air and distributes it to the cylinders.

The eccentric shaft of the compressor is connected directly with the propeller shaft of the car. Hence, when the crank shaft is turning the compressor pistons are prevented from moving by the resistance of the vehicle. At first the eccentric shaft is stationary, hence the cylinder and piston groups revolving around it receive sufficient relative motion to cause air to be compressed and forced into the cylinders. As the vehicle commences to move, the eccentric shaft is given an increasing rate of rotation owing to the force within the controller cylinders due to the work of compressing more air for the engine. But always, there is a direct balance between the traction resistance and the compression pressure attained, so that the power of the engine, which is determined indirectly by the compression, and the load remain in fixed relation. That is to say, as the load requirement increases the amount of power produced by the engine increases, and vice versa. The only regulating device required thus becomes a single air valve which is placed between the compressor and the engine and which acts in the same way as a throttle. As a certain amount of the compressed air may be by-passed into a reservoir, the system may be started at any time without cranking.

The engine proper may be considered as a plain two-cycle engine which is fed with carburetted air under variable degrees of compression, the amount of compression being varied automatically to suit the power requirement of the engine. The accompanying illustration serves to render its construction clear. Although both inlet and auxiliary exhaust valves are employed, they are automatic in action and require no external valve mechanism.

In action the port, a, registers with port, a-1, in the wall, as the piston rises, admitting the pre-compressed and carburetted charge to the cylinder through the port a-2 by way of the automatic inlet valve, b. After the port, a-1, has been passed, and the intake in consequence has ceased, the gas is further compressed in the combustion chamber, c, the intake valve thereby being closed. Ignition then takes place, and the valve remains closed by the pressure of the explosion, as the piston f is forced down past the port, a-1.

Near the bottom of the stroke the exhaust port, e, in the cylinder wall, is uncovered and a large proportion of the exhaust gas is expelled by expansion. As the crank comes around for the up-stroke of the piston the lower arm, g, which it carries, swings over far enough to open the auxiliary exhaust valve, d, and holds it open until the piston has ascended almost to the top of its stroke again, and

until the inlet valve begins to open to admit a second charge to the cylinder. The straightening out of the connecting rod at the top of the stroke allows the valves to close, as the arm, g, backs away from the stem, g-2, thus again closing the combustion chamber.

In this way the complete cycle is carried out automatically and the cylinder thoroughly evacuated at the end of each working stroke. The motor is built in four cylinder form with its vertical, water-cooled cylinders cast in pairs and looking not unlike those of the standard type of four-cycle engine in general outward form. Besides the advantages of eliminating the change gear arrangement and simplifying car operation, the system is claimed to develop a 300 per cent. increase in power—presumably based on the dimensions of the working cylinder—and in addition to the flexibility achieved, to ensure extremely long life for the working parts, owing to the balancing of the work developed against the load.

The following is the full list of accessory exhibitors:

Adams & Westlake Co., Chicago, Ill.—Side lamps, tail lights and electric lighting system.
American Ball Bearing Co., Cleveland, Ohio—Ball bearings and axles.
Atlas Chain Co., Brooklyn, N. Y.—Atlas tire chains.
Auto Improvement Co., New York City—Self-starting devices and accessories.
Automatic Motor & Engineering Co., Chicago, Ill.—Motors.
Auto Parts Mfg. Co., Muncie, Ind.—Transmissions and clutches.
Badger Brass Mfg. Co., Kenosha, Wis.—Solar lamps and generators.
Baldwin Chain & Mfg. Co., Worcester, Mass.—Baldwin chains and recoil checks and Brown steering gears.
Bosch Magneto Co., New York City—Ignition systems.
Bowser & Co., S. F., Fort Wayne, Ind.—Bowser gasoline and oil storage apparatus.
Briggs Mfg. Co., Elkhart, Ind.—Briggs magneto.
Briggs & Stratton Co., Milwaukee, Wis.—B & S igniter.
Brisco Mfg. Co., Detroit, Mich.—Radiators and fittings.
Brown Lipe Gear Co., Syracuse, N. Y.—Transmissions, differentials and steering gears.
Byrne, Kingston & Co., Kokomo, Ind.—Kingston carburetters.
Chilton Co., Philadelphia, Pa.—Publications.
Cleveland-Canton Spring Co., Chicago, Ill.—Springs.
Cleveland Speed Indicator Co., Cleveland, Ohio—Cleveland speed and time indicators.
Columbia Lubricants Co., New York City—Lubricants.

Commercial Vehicle, New York City—Publications.
Connecticut Telephone and Electric Co., Meridan, Conn.—Shock absorbers, spark coils, magnetos and ignition specialties.
Consolidated Rubber Tire Co., New York City—Tires.
Continental Caoutchouc Co., New York City—Continental tires and rims.
Continental Motor Mfg. Co., Muskegon, Mich.—Motors.
Continental Rubber Works Co., Erie, Pa.—Tires.
Cook's Standard Tool Co., Kalamazoo, Mich.—Tools.
Cowles & Co., C., New Haven, Conn.—Forgings, mountings and trimmings.
Cramp & Sons Ship and E. B. Co., Wm., Philadelphia, Pa.—Bronze and bearing metals.
Detroit Lubricator Co., Detroit, Mich.—Lubricators.
Diamond Chain & Mfg. Co., Indianapolis, Ind.—Chains.
Dietz Co., New York City—Lamps.
Dixon Crucible Co., Jos., Jersey City, N. J.—Lubricants.
Driggs-Seabury Ordnance Corp., Sharon, Pa.—Crank shafts and frames.
Eagle Co., Newark, N. J.—Windshields and spark plugs.
Edmunds & Jones Mfg. Co., Detroit, Mich.—Lamps.
Edison Storage Battery Co., Orange, N. J.—Storage batteries.
Eisemann Magneto Co., New York City—Magnetos.
Electric Storage Battery Co., Philadelphia, Pa.—Accumulators.
Empire Tire Co., Trenton, N. J.—Empire tires.
Excelsior Motor & Mfg. Co., Chicago, Ill.—Motors.
Franklin Mfg. Co., H. H., Syracuse, N. Y.—Die cast parts.
Findeisen & Krypt Mfg. Co., Chicago, Ill.—Carburetters and specialties.
Firestone Tire & Rubber Co., Akron, Ohio—Firestone pneumatic and solid tires.
Fisk Rubber Co., Chicopee Falls, Mass.—Fisk tires.
Gabriel Horn Mfg. Co., Cleveland, Ohio—Gabriel exhaust horns and Foster shock absorbers.
Garage Equipment Mfg. Co., Milwaukee, Wis.—Gem spark plug wrench and supplies.
Gemmer Mfg. Co., Detroit, Mich.—Steering gears and parts.
Gibney & Bro., Jas. L., Philadelphia, Pa.—Electric tire vulcanizer.
Goodrich Co., B. F., Akron, Ohio—Goodrich tires.
Goodyear Tire and Rubber Co., Akron, Ohio—Goodyear tires and air bottles.
Gray & Davis, Amesbury, Mass.—Lamps.
Gray-Hawley Mfg. Co., Detroit, Mich.—Exhaust horns and mufflers.
G & J Tire Co., Indianapolis, Ind.—G & J tires.

Ham Mfg. Co., Rochester, N. Y.—Lamps and rear signal system.
 Harris Oil Co., A. W., Providence, R. I.—Lubricants.
 Hartford Rubber Works Co., Hartford, Conn.—Hartford tires.
 Hartford Suspension Co., Jersey City, N. J.—Truffault-Hartford shock absorbers.
 Havoline Oil Co., New York City—Lubricants.
 Hayes Mfg. Co., Detroit, Mich.—Metal bodies, hoods, fenders, gasoline tanks, etc.
 Hayes Wheel Co., Jackson, Mich.—Wheels.
 Heinze Electric Co., Lowell, Mass.—Magnetos, coils and ignition devices.
 Herz & Co., New York City—Power driven garage air pump and ignition devices.
 Homo Co. of America, Jersey City, N. J.—Homo mixer.
 Hollingshead Co., R. M., Camden, N. J.—Automobile lubricants, soaps and metal polish.
 Horseless Age, New York City—Publications.
 Imperial Brass Mfg. Co., Chicago, Ill.—Tire pumps.
 International Metal Polish Co., Indianapolis, Ind.—Metal polish.
 Jones Speedometer Co., New York City—Speedometers, odometers, annunciators and specialties.
 Kokomo Electric Co., Kokomo, Ind.—Kingston coils and timers.
 Link Belt Co., Philadelphia, Pa.—Chains.
 Long Mfg. Co., Chicago, Ill.—Rad.ators.
 Lovell-McConnell Mfg. Co., Newark, N. J.—Klaxon horns.
 Lutz-Lockwood Mfg. Co., Roselle, N. J.—S-X ignition devices.
 McCord Mfg. Co., Detroit, Mich.—Radiators, lubricators, fans and gaskets.
 Motor Vehicle Publishing Co., New York City—Publications.
 Mezger, C. A., Inc., New York City—Windshields and "Soot-proof" plugs.
 Michelin Tire Co., Milltown, N. J.—Michelin tires.
 Model Gas Engine Works, Peru, Ind.—Motors, clutches and transmissions.
 Morgan & Wright, Detroit, Mich.—Morgan & Wright tires.
 Morrison-Ricker Mfg. Co., Grinnell, Ia.—Grinnell gloves.
 Motz Clincher Tire & Rubber Co., Akron, Ohio—Tires.
 Muncie Gear Works, Muncie, Ind.—Parts.
 Nathan Novelty Mfg. Co., New York City—Leggins, tool bags, etc.
 National Carbon Co., Cleveland, Ohio—Dry cells.
 National Coil Co., Lansing, Mich.—Spark coils.
 National Tube Co., Pittsburg, Pa.—Shelby seamless steel tubing.
 New York & New Jersey Lub. Co., New York City—Lubricants.
 Oliver Mfg. Co., Chicago, Ill.—Peerless jacks.

Pennsylvania Rubber Co., Jeannette, Pa.—Pennsylvania tires.
 Perfection Spring Co., Cleveland, Oh.—Automobile springs.
 Pittsfield Spark Coil Co., Dalton, Mass.—Magnetos, coils, plugs and ignition devices.
 Power Wagon, Chicago Ill.—Publications.
 Racine Auto Tire Co., Chicago, Ill.—Tires.
 Randall-Faichney Co., Boston, Mass.—Jericho exhaust horns, B-line grease guns and Bing spark plugs.
 Remy Electric Co., Anderson, Ind.—Magnetos.
 Republic Rubber Co., Youngstown, Ohio—Republic tires.
 Ross Gear & Tool Co., Lafayette, Ind.—Steering gears.
 Royal Equipment Co., Bridgeport, Conn.—Band brakes and brake lining material.
 Sheldon Axle Co., Wilkes-Barre, Pa.—Axles and springs.
 Simms Magneto Co., New York City—Simms magneto.
 Smith Co., A. O., Milwaukee, Wis.—Gears and parts.
 Sparks, Frank E., Chicago, Ill.—Combined tire and tool case.
 Sparks-Withington Co., Jackson, Mich.—Fans, stampings and screw machine products.
 Spltdorf, Inc., C. F., New York City—Spltdorf magnetos, plugs and ignition devices.
 Standard Roller Bearing Co., Philadelphia, Pa.—Roller bearings.
 Standard Welding Co., Cleveland, Ohio—Electrically welded tubing and parts.
 Stewart & Clark Mfg. Co., Chicago, Ill.—Speedometers.
 Stromberg Motor Devices Co., Chicago, Ill.—Carburettors.
 Superior Motor Vehicle Co., Buffalo, N. Y.
 Swinehart Tire & Rubber Co., Akron, Ohio—Swinehart tires.
 Thermoid Rubber Co., Trenton, N. J.—Tires, tubes and brake linings.
 Timken Roller Bearing Co., Canton, Ohio—Roller bearings.
 Timken-Detroit Axle Co., Detroit, Mich.—Axles.
 Turner Brass Works, Sycamore, Ill.—Brass parts and fittings.
 Universal Tire Protector Co., Angola, Ind.—Universal tire protector.
 U. S. Light & Heating Co., New York City—Storage batteries.
 Valentine & Co., New York City—Varnishes.
 Van Wagner Co., E. B., Syracuse, N. Y.—Dies and finished metal castings.
 Veeder Mfg. Co., Hartford, Conn.—Tachometers and odometers.
 Vesta Accumulator Co., Chicago, Ill.—Accumulators.
 Warner Gear Co., Muncie, Ind.—Gears and parts.
 Warner Instrument Co., Beloit, Wis.—Warner autometers and clocks.

Warner Mfg. Co., Toledo, Ohio—Transmissions and steering gears.
 Weed Chain Tire Grip Co., New York City—Weed tire chains.
 Western Motor Co., Logansport, Ind.—Motors.
 Whiteley Steel Co., Muncie, Ind.—Steel castings.
 Wheeler & Shebler, Indianapolis, Ind.—Carburettors and magnetos.
 Whitney Mfg. Co., Hartford, Conn.—Whitney chains.
 Williams Co., J. H., New York City—Forgings.
 Willard Storage Battery Co., Cleveland, Ohio—Elba lighting outfits.

Motorcycle Section

American Motor Co., Brockton, Mass.—M. M.
 Aurora Automatic Machinery Co., Chicago, Ill.—Thor.
 Detroit Motorcycle Mfg. Co., Detroit, Mich.—Detroit.
 Edwards-Crist Mfg. Co., Chicago, Ill.—Armac.
 Emblem Mfg. Co., Angola, N. Y.—Emblem.
 Excelsior Supply Co., Chicago, Ill.—Excelsior.
 Harley-Davidson Motor Co., Milwaukee, Wis.—Harley-Davidson.
 Hendee Mfg. Co., Springfield, Mass.—Indian.
 Merkel-Light Motor Co., Pottstown, Pa.—Merkel.
 Miami Cycle & Mfg. Co., Middletown, Ohio—Racyle.
 Minneapolis Motorcycle Co., Minneapolis, Minn.—Minneapolis.
 New Era Auto-Cycle Co., Dayton, Ohio—New Era Auto-Cycle.
 N. S. U. Motor Co., New York City—N. S. U.
 Pierce Cycle Co., Buffalo, N. Y.—Pierce.
 Pope Mfg. Co., Hartford, Conn.—Pope.
 Reading Standard Co., Reading, Pa.—Reading Standard.
 Reliance Motorcycle Co., Owego N. Y.—Reliance.
 Schickel, Norbert R., New York City—Schickel.
 Wagner Motorcycle Co., St. Paul, Minn.—Wagner.

Motorcycle Accessories.

Bicycling World and Motorcycle Review, New York City—Publications.
 Eclipse Machine Co., Elmira, N. Y.—Coaster brakes.
 Motorcycle Publishing Co., New York City—Publications.

San Francisco Show Goes Over a Month.

San Francisco's automobile show, over which the local dealers clashed with the officers of the San Francisco Motor Club, under whose management the show was to have been held during the week of February 4-11, has been postponed. The new dates are March 4-11, inclusive.

Jersey City's Personally-Promoted Show to End in a Waltz

Jersey City, N. J., is "reveling" in its first personally-promoted automobile show. Opened on Saturday night last, 4th inst., under the management of O. D. Corbett, who has promoted "affairs" on the Guttenberg track, the exhibition is housed in the Fourth Regiment Armory, where it will continue for the balance of the week,

for the expected evening crush. The failure of Jerseyites to rush to this show—Jersey City's first attempt—is attributed to the city's recent acquisition of a mantle of white and the attendant "sloppy going," but the promoter is optimistic and hopes for a record-breaking crowd during the balance of the week.

Owen & Co., Newark, N. J., Reo and Premier; Hudson Motor & Garage Co., Hoboken, N. J., Hudson, Chalmers and Morgan trucks; Union Auto Co., Union Hill, N. J., National and Marion; John Moore & Co., New York City, Brush; Lexington Motor Car Co., New York City, Lexington; Anderson Carriage Co., New York



JERSEY CITY'S FIRST "SHOW" SCATTERED ABOUT THE FOURTH REGIMENT ARMORY

and be closed Saturday evening, 11th inst. Decorations are scarce, and except for a draping of flags around the balconies and the interspersing of "no less than 100 large palms" among the exhibits, the cars are staged in spaces marked by an amplitude of room. Though the show is advertised as being open from 11 o'clock in the morning till 11 o'clock at night, the doors had not been opened at noon on Tuesday, when the Motor World man arrived, and when they were opened, he enjoyed the distinction of being the only spectator, the solitude of the building being unbroken except for the activities of two gentlemen of color who were busily preparing their charges

Included in the 21 makes of cars represented in the 42 complete cars on view are three brands of trucks, Morgan, Grabowsky and Autocar. The only display of accessories is in the space occupied by the Union Automobile Co., where Howard demountable rims are shown. The exhibitors and the cars they show are as follows: Commercial Maintenance & Motor Co., Newark, N. J., Grabowsky trucks; J. Ludwig, Newark, N. J., Randolph trucks; O'Neil Motor Car Co., Newark, N. J., Paterson; Livingston Motor Car Co., Bayonne, N. J., Overland; Correja Motor Car Co., Newark, N. J., Correja; Haynes Automobile Co., Newark, N. J., Haynes; R. M.

City, Detroit electric; Clinton Auto and Garage Co., Jersey City, N. J., E-M-F, Flanders and Oldsmobile; Reynolds & Erwin, Newark, N. J., Penn "30"; Autocar Co., New York City, Autocar.

"On with the dance—let joy be unconfined" will be the slogan on Saturday night an hour before closing time, for the managers propose to establish a precedent by turning the automobile show into a "hop." Legerdemain will not be necessary for the "lightning change," however, as the cars merely will be rolled back against the walls to make room for the merrymakers who will whirl and pirouette until the witching hour of midnight.

A. L. A. M. PREPARES FOR REBIRTH.

(Continued from page 610)

Co., Elmer Apperson and George H. Strout; Autocar Co., John S. Clarke; Bartholomew Co., J. B. Bartholomew; Brush Runabout Co., Horace DeLisser; Buckeye Mfg. Co., G. A. Lambert; Buick Motor Co., G. W. Nash; Cadillac Motor Car Co., Ernest Benson; Chalmers Motor Co., Hugh Chalmers and C. C. Hildebrandt; Columbia Motor Car Co., H. W. Nuckols; Dayton Motor Car Co., Horace DeLisser; E-M-F Co., George E. Keller; H. H. Franklin Mfg. Co., H. H. Franklin and G. H. Stilwell; Hudson Motor Car Co., R. D. Chapin; Jackson Automobile Co., G. A. Matthews and N. S. Potter; Locomobile Co. of America, A. W. Robinson; Lozier Motor Co., F. C. Chandler; Matheson Motor Co., C. W. Matheson and W. C. Shepherd; Maxwell-Briscoe Motor Co., Horace DeLisser; Metzger Motor Car Co., William E. Metzger; Mitchell-Lewis Motor Co., William Mitchell Lewis and James Gilson; Moline Automobile Co., William H. Van Dervoort; Moon Motor Car Co., S. McDonald; National Motor Vehicle Co., A. C. Newby and George M. Dickson; Nordyke & Marmion Co., W. C. Marmon and C. C. Hanch; Packard Motor Car Co., S. D. Waldron; Alfred Macauley and M. J. Budlong; Peerless Motor Car Co., G. B. Diddel, Jr.; Pierce-Arrow Motor Car Co., Charles Clifton; Premier Motor Mfg. Co., H. O. Smith; Pullman Motor Car Co., T. C. O'Connor; Reo Motor Car Co., R. E. Olds and R. M. Owen; Alden Sampson Mfg. Co., Horace DeLisser; F. B. Stearns Co., Edwin McEwen; Stevens-Duryea Co., C. W. Richards and G. S. Delaney; Studebaker Automobile Co., George E. Keller; Waltham Mfg. Co., Windsor T. White; Willys-Overland Co., John N. Willys and George W. Bennett; Winton Motor Carriage Co., Thomas Henderson.

Alfred Reeves, general manager of the A. L. A. M., and H. A. Bonnell also were present.

The prospectus which the meeting discussed, as the Motor World of last week stated, provides for the organization of a corporation, under the laws of New York, with authorized capital stock of \$10,000, divided into 100 shares of \$100 common stock.

The name suggested for the proposed corporation was the Motor Vehicle Co., but it was provided that this merely is in the line of suggestion, final selection of a name being left with the organization committee, as was the formulation of the certificate of incorporation and the by-laws of the company.

It was provided that the board of directors shall consist of seven members who need not be stockholders, and that the officers shall be a president, a vice-president, a secretary and a treasurer, and that a gen-

eral manager shall be elected by the directors.

After stipulating that the general offices of the company shall be in New York City, and that regular quarterly meetings of the stockholders shall be held, the prospectus, to which is appended the proposed contract for stockholders and which, by the by, was sent only to members of the A. L. A. M. and not to all of the licensees under the Selden patent, is as follows:

VII. Every member of the A. L. A. M. who shall be in good standing with the A. L. A. M. shall have the right to subscribe for and take one share of the capital stock of the company at par for cash at any time within 30 days from and after the incorporation of the company, with the understanding and upon the condition that all the stockholders shall execute a written agreement wherein they shall waive their right to subscribe for and take any of the shares of the authorized capital stock of the company other than the one share which they shall each have the right to subscribe for and take, and wherein they shall agree that all the shares of said stock excepting the one share that each of them shall have the right to subscribe for and take, may be sold at par for cash to such other parties engaged in the manufacture of automobiles anywhere in the United States as shall be determined upon by the affirmative vote of all of the directors of the company, or as shall be determined upon by the affirmative vote of stockholders owning at least two-thirds of all of the shares of the capital stock of the company then issued and outstanding; provided, however, that no more than one share of said stock shall be sold and issued to any one party.

IX. The by-laws of the company shall contain an article or clause to the effect that no letters patent or application for letters patent or invention of any kind which shall be owned by any stockholder of the company or in and to which any stockholder of the company shall, directly or indirectly, have any right, title and interest shall be purchased by the company without the purchase thereof being authorized by the affirmative vote of all of the directors of the company, taken at a regular or special meeting of the board of directors, or by the affirmative vote of stockholders owning at least two-thirds of all of the shares of the capital stock of the company issued and outstanding at the time of the proposed purchase thereof, taken at a regular or special meeting of the stockholders.

Company's Contract With Stockholders.

A written contract shall be made between the company and each stockholder wherein:

(a) The company shall grant unto the stockholder the non-exclusive license to manufacture and sell vehicles embodying any of the inventions covered by all letters patent of the United States and applications for letters patent of the United States which may be acquired by the company anywhere within the United States and the Territories and Colonial possessions thereof to the full end of the terms for which all letters patent of the United States have been and may be granted to such inventions, unless the contract is sooner terminated in the manner hereinafter mentioned.

(b) The company shall covenant that it will not grant any license under any of the letters patent of the United States

and applications for letters patent of the United States covered by paragraph (a) to any party other than a stockholder of the company, except as hereinafter provided, and will not grant any license to any stockholder of the company upon any terms, conditions and covenants more favorable than those upon which licenses shall have been granted by the company to other stockholders. Provided, however, that whenever the board of directors by an affirmative vote of all of the directors, or the stockholders by the affirmative vote of stockholders owning at least two-thirds of all of the shares of the capital stock of the company then issued and outstanding shall authorize any license to be granted by the company to any party who is not a stockholder of the company, then the company shall grant such license to such party, but only upon such terms, conditions and covenants as shall be authorized by the affirmative vote of all of the directors or by the affirmative vote of stockholders owning at least two-thirds of all of the shares of the capital stock of the company then issued and outstanding.

(c) The company shall covenant that, whenever any stockholder shall request it to pay all disbursements, expenses and costs, including fees of counsel, which shall be incurred in and about defending any suit which shall be brought by any party against the stockholder for any infringement of any letters patent of the United States, and the board of directors of the company, at any regular or special meeting thereof by the affirmative vote of all of the directors, or the stockholders of the company, at any regular or special meeting of stockholders by the affirmative vote of stockholders owning at least three-fourths of all of the shares of the capital stock of the company then issued and outstanding, shall determine that it is for the best interests of the company to do so, then the company will pay all disbursements, expenses and costs, including fees of counsel, which shall be incurred in and about the defense of such suit. Provided, however, that the company shall have the exclusive control and management of the defense in such suit and shall also have the exclusive right to compromise or settle such suit on behalf of the defendant upon such terms and in such manner as the board of directors of the company, at any regular or special meeting thereof by the affirmative vote of at least a majority of the directors, may determine to be advisable; and provided further that the company shall not be required to pay any disbursements, expenses, costs or fees of counsel or to take the control or management of the defense in any suit which shall be brought by any stockholder of the company against any other stockholder of the company, and shall not be required to pay any fees of any counsel who shall not be retained or employed by the company.

(d) The stockholders shall covenant to pay to the company at the time of the execution of the contract the sum of \$1,000 as a partial consideration for said license and for the benefits to be derived by the stockholder from the performance of the covenants to be performed by the company.

(e) The stockholders shall further covenant to pay to the company an amount equal to one-tenth of one per cent. of the gross amount of the sales of automobiles propelled by internal combustion engines which shall be sold by the stockholder, not including, however, any sales of parts or any repairs, and the amount which the stockholder shall pay to the company un-

der this paragraph shall be additional consideration for said license and for the benefits to be derived by the stockholder from the performance of the covenants to be performed by the company.

(f) The stockholder shall further covenant to render to the company, within the first ten days of January, April, July and October of each year, written reports under oath, setting forth the number and kinds of automobiles propelled by internal combustion engines made, sold or otherwise disposed of by the stockholder during the preceding three calendar months and the catalogue prices of the same, and the amount of the gross sales of such automobiles which shall have been sold by the stockholder during the preceding three calendar months, not including, however, any sales of parts or any repairs, and shall further covenant to pay to the company, within ten days thereafter, the aggregate sum of money which shall be payable by the stockholder to the company for the preceding three calendar months according to the terms of paragraph (e).

(g) The stockholder shall further covenant to keep books of account, giving full particulars of the business of the stockholder, and to permit any officer or duly authorized representative of the company, at all reasonable times, to inspect such books and the premises where the business is carried on.

(i) The company shall further covenant to mark all vehicles manufactured under the contract with the word "Patented" or a proper abbreviation thereof and the date of each patent under which the vehicle shall be manufactured.

(i) The company shall further covenant that, whenever it shall have in its treasury more than \$100,000 in cash in excess of the amount required to pay all indebtedness and liabilities of the company (except liability on capital stock and all liabilities under contract similar to the one in question), and the board of directors shall determine by the affirmative vote of at least two-thirds of all of the directors at any regular or special meeting of the board of directors that the excess above said sum of \$100,000 is not required for the business of the company or for the purchase of any letters patent or application for letters patent or invention, and that it is desirable to use such excess for the payment of rebates to the stockholders who have made contracts with the company similar to the one in question, and the board of directors by a like vote at a regular or special meeting of the board of directors should authorize such rebates to be paid, then the company shall pay to the stockholders as a rebate a proportion of the excess over and above said sum or \$100,000, which proportion shall be such as the aggregate amount paid by the stockholder to the company under the contract shall bear to the whole amount paid by all of the stockholders to the company under similar contracts, as, for instance, if the aggregate amount paid by the stockholders was \$20,000 and the whole amount paid by all of the stockholders was \$200,000, then the stockholder would be entitled to 10 per centum of such excess.

(j) The stockholder shall further covenant that if the stockholder should fail or refuse to keep, observe or perform any covenant required to be kept, observed or performed by the stockholder, or if the stockholder should make an assignment for the benefit of creditors or should be adjudged a bankrupt, or if any receiver should be appointed to take charge of the

property and assets of the stockholder, or if there should be any judicial sale of any of the property or assets of the stockholder, or if the stockholder should attempt to assign or transfer the right, title and interest of the stockholder in and to the contract and the rights, privileges and benefits under the contract, then the company shall have the right to cancel the contract by giving to the stockholder thirty days' written notice to that effect; and that the stockholder shall not be thereby relieved from the payment of any sum of money which shall have become payable before such cancellation of the contract.

(k) The stockholder shall further covenant to assign the one share of the capital stock of the company owned by the stockholder to such party as shall be selected by the board of directors of the company to be held by such party in trust for the purpose of the contract, and such trustee shall be fully authorized to assign said one share of stock to the company or its nominee whenever the company may be entitled to the same according to the terms of the contract, and that if the contract should be cancelled under the terms of paragraph (j), then and immediately thereupon said one share of stock shall be assigned to the company at the price of \$100, and thereafter the stockholder shall have no right, title or interest in and to said one share of stock and shall make no claim or demand therefor. If, however, the contract should not be cancelled under the terms of paragraph (j) and the stockholder should keep, observe and perform all of the covenants to be kept, observed and performed by the stockholder, then upon the termination of the contract the trustee shall reassign to the stockholder said one share of stock. The stockholder shall have the right to vote on said one share of stock during the whole time it is so held in trust.

The company shall covenant that if the contract should be cancelled under the terms of paragraph (j), then it will, immediately upon the assignment of said one share of stock to it, purchase and accept the same and pay to the stockholder or its assignee or receiver said sum of \$100 therefor.

(l) The stockholder shall further covenant that if the contract should be cancelled according to the terms of paragraph (j), then and thereafter the stockholder shall not be entitled to any sum of money under the terms of paragraph (i). Provided, however, that if the contract should be cancelled by reason of the stockholder making an assignment for the benefit of creditors or being adjudged a bankrupt, or by reason of a receiver being appointed to take charge of the property and assets of the stockholder, or by reason of there being any judicial sale of any of the property or assets of the stockholder, then the stockholder or its assignee or receiver shall be entitled to any and every sum of money which shall have become payable to the stockholder under the terms of paragraph (i) before the happening of either of such events if the stockholder shall have kept, observed and performed all of the covenants of the stockholder previous to the happening of any such event and the stockholder shall not have attempted to assign and transfer the right, title and interest of the stockholder in and to the contract and the rights, privileges and benefits under the contract.

(m) The company and the stockholder shall mutually covenant that the contract shall continue in force for a period of 10 years, unless sooner terminated according

to the terms of paragraph (j); and that upon the termination of the contract at the expiration of said 10 years the stockholder shall be entitled to receive from the company and the company shall pay to the stockholder the full amount to which the stockholder shall be entitled according to the terms of paragraph (i) if the contract shall not have been cancelled according to the terms of paragraph (j) and if the stockholder shall have faithfully kept, observed and performed all of the covenants required to be kept, observed and performed by the stockholder.

(n) The company and the stockholder shall further mutually covenant that the right, title and interest of the company in and to the contract and its rights, privileges, benefits and advantages thereunder shall not be assignable by the company or by operation of law without the previous written consent of the stockholder; and the right, title and interest of the stockholder in and to the contract and the rights, privileges, benefits and advantages of the stockholder thereunder shall not be assignable by the stockholder or by operation of law without the previous written consent of the company.

Wants Government to Create New Bureau.

At a meeting of the American Automobile Association in Chicago on Thursday last, 2nd inst., the organization passed resolutions urging the creation of a Bureau of Roads-Travel, to be made a part of the Department of Interior and similar to the Ministry of Travel in France. It is the idea, among other things, that this bureau shall plan a system of national and state routes and mark them accordingly. For instance, if National Route No. 1 extends from New York to Chicago to San Francisco, all sign boards will carry the designation "N. R. No. 1." It is believed that a system of the sort will greatly facilitate inter-state touring and serve other good purposes.

The association also placed itself on record as favoring the construction of a national memorial highway, from the city of Washington to Gettysburg battlefield, in honor of President Abraham Lincoln. A measure of this sort was passed by the Senate a year ago, but was defeated in the House, largely, it is said, because of the opposition of Speaker Cannon.

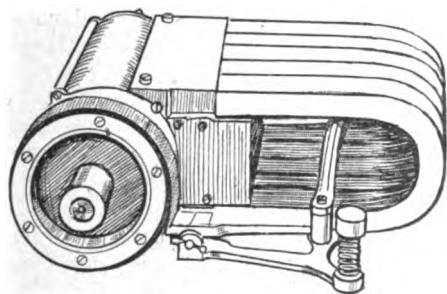
At the Chicago meeting E. C. Pelouze, of Richmond, Va.; Oliver A. Quale, of Albany, N. Y., and H. E. Coffin, of Detroit, Mich., were added to the executive committee.

Los Angeles Non-Stop Record Rejected.

Because it was not sanctioned or run in accordance with A. A. A. rules, S. M. Butler, chairman of the contest board of the American Automobile Association, has rejected the claim for the recent non-stop run of 10,872 miles made in a Flanders car in Los Angeles, Cal. The official non-stop record, therefore, still stands at 10,000 miles and to the credit of a Maxwell car, which completed the performance between March 18 and April 12, 1909.

Electric Lighting Systems and Their Developments

That seemingly trivial distinction between pushing a button and scratching a match—or sometimes a great many matches—in order to light the lamps may be said to have been mainly responsible for the application of electric lighting to the automobile. Until within a comparatively short time no one ever seemed to think of the influence of the automobile on the match market, although its influence upon nearly every other branch of activity has been studied and commented upon most assiduously. The present show season, however, has revealed a rather sudden and somewhat unexpected movement in the direction of match-economy, or rather in the development of the electrical substitute, insofar as the motorist is concerned.



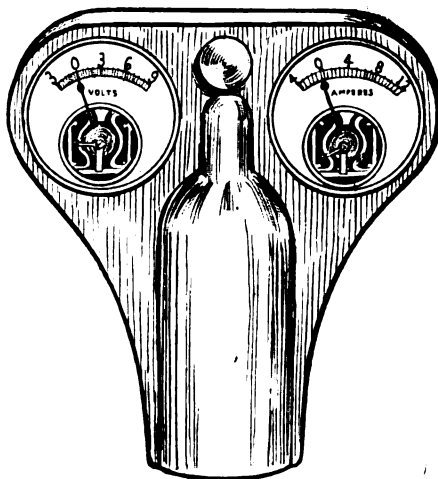
K-W LIGHTING MAGNETO

While the use of electric lights has been growing steadily for two years and more, it was not until this year that the development of independent lighting systems became sufficiently general to attract attention. Last year two or three complete systems were on view at the shows, in addition to the exhibits of the lamp makers and battery producers, which were intended for automobile use. This year no less than ten complete and distinctive systems of the sort have been displayed at the shows, while at least two others have been given more or less limited demonstration outside the shows. Several other systems in addition are known to be in the making and more or less rapidly approaching marketable condition.

The particular element of novelty, or rather of apparent novelty, in the newer electric lighting systems is that, while most of them include storage batteries, they are all self-sustaining. That is to say, they do not require replenishment from external sources, as does the system that is fed by batteries alone; the lamps require practically no attention, there are no oil-fonts to be refilled, no tanks to be exchanged. The only attention that is required ordinarily is the same nature as that which must be given to the standard automobile

mechanism, which consists of cleaning and oiling the moving parts. This advantage, coupled with the bother and fickleness of matches, even as a final touch in lighting the immaculate cigarette, lends peculiar attractiveness to the system as a commercial proposition.

Electrically the direct generation of current for lighting is as feasible as it is for ignition purposes, and it may be added that the basic distinction between electric lighting and electric ignition systems is prac-



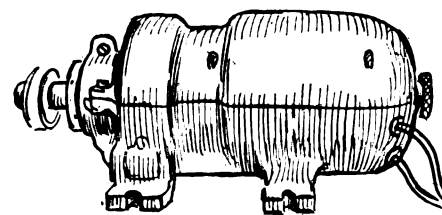
GRAY & DAVIS METER SET

tically indistinguishable. Certain difficulties are involved in the development of the lighting system, so much so, in fact, that although several attempts were made to perfect it in conjunction with the ignition some years ago, little came of them, the ultimate solution of the problem being made to await the evolution of the more important ignition system. With the present movement, however, has come not only a renewal of the former project of generating lighting current directly on the car, but also that of centralizing the lighting and ignition systems, therefore, contemplate the use of a single electrical generator and battery for supplying both ignition and lighting current, the former through a transformer coil and the latter directly.

As the general principles involved already have been rendered more or less familiar in connection with their application to ignition and also to lighting by means of batteries, it follows that there should be little difficulty in comprehending the nature of the new lighting equipments. At the same time, the methods that have been employed to secure uniform output regardless of fluctuations in engine speed and to protect the battery against either

overcharge or discharge at an excessive rate reveal so much ingenuity as to merit individual study. Such methods, of course, are subject to classification to some extent, though necessarily on a technical basis. For ordinary purposes it is sufficient to consider the principles in their direct application to existing systems.

Considering the fundamental similarity between ignition and lighting requirements as far as current is concerned, and also the simplicity of the modern magneto, it is logical to anticipate the developments in lighting along this line. Because commercial lighting systems on a larger scale employ of necessity the dynamo, rather than the magneto as a source of current, however, it follows that the dynamo systems are in the majority among the new



GRAY & DAVIS GENERATOR

car-lighting systems. Nevertheless, several magneto systems are in use.

One of the simplest of these, and one which is strikingly elementary in its character, is produced by the K-W Ignition Co., Cleveland, Ohio, its principal part being styled the K-W lighting magneto. In form the latter is almost exactly the same as the K-W low-tension ignition magneto, and consists merely of triple magnets, the base and pole pieces and the revolving armature. As in the ignition magneto, the revolution of the armature causes an alternating current to be generated in the windings which, in the lighting system, is conducted directly to the lamps. The magneto may be driven either by belt or direct friction contact, and is built in the horizontal type shown in the accompanying illustration, and also in vertical and inverted types. It is designed to illuminate the searchlights, and also may be used for a meter light or tail lamp. As the current ceases to be generated when the engine stops, however, the manufacturer does not recommend its use for the latter purpose except in a combination oil and electric fixture. The magneto may be used to furnish ignition current through a transformer coil when the lights are not in service. The magneto complete weighs but 21 pounds.

The Volta magneto, which is made by

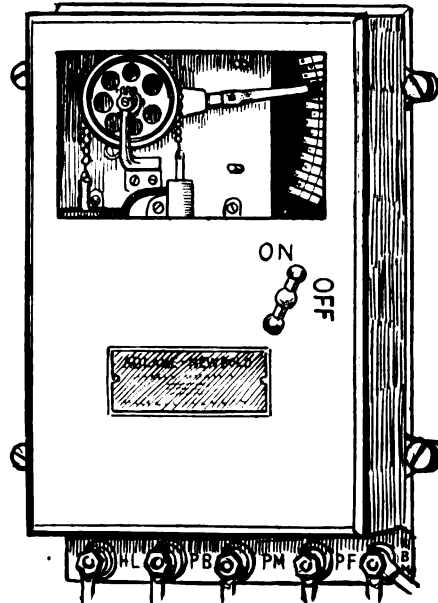
the Buffalo Ignition Co., Buffalo, N. Y., also is produced in a style suitable for use in car lighting. The new Remy system, which was described exclusively by the Motor World last week, in connection with the account of the sale of the Remy Electric Co. to Indianapolis interests, is an advanced development of the same idea. Besides working in conjunction with a battery, it is designed to supply ignition and lighting currents simultaneously, the former purpose being served through the medium of a true dual system, which provides for engine starting "on the spark."

As has been indicated, a majority of the producers of lighting systems now in the field, instead of the magneto prefer to use some form of dynamo, the distinction between a dynamo and magneto, of course, being that the dynamo is equipped with electric magnets instead of permanent magnets, as is the magneto. The magnetic poles of the dynamo are relatively weak, but they are wound with a series of coils through which current from the armature is passed, which serves to "build up" a very strong field, from which a much stronger current can be induced than permanent magnets would generate, unless they were of unwieldy size. As is true of the magneto, the voltage and also the current strength, or amperage, depends upon the rate of revolution of the armature in any given instrument. In the case of the ignition magneto this variation of the electrical output of the instrument in proportion to the speed of the engine is not of particular importance. Where lighting is to be considered, however, it is exceedingly important that the voltage be kept as nearly constant as possible, while it is equally important that the amount of current generated should be maintained in proper proportion to the load. Hence some form of regulation must be resorted to.

The improved Gray & Davis lighting system, which is produced by Gray & Davis, Amesbury, Mass., is noteworthy in this connection because the method of regulation employed involves no electrical complications, but instead a simple mechanical governor on the armature shaft, which is designed to keep the latter turning at practically constant speed regardless of variations in the speed of the engine. The governor is of the fly-ball type and operates through a flat-plate friction clutch of large diameter with aluminum to asbestos fiber working surfaces. Up to an armature speed of 1,200 revolutions per minute, the clutch holds fast, and is so balanced that it is capable of sustaining a 50 per cent. overload without slipping. As the speed of the driving pulley increases above that point, however, the clutch begins to slip and continues to do so just sufficiently to hold the armature down to that speed.

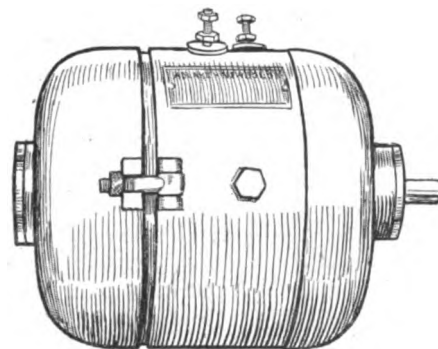
The Gray & Davis dynamo, which is specially designed for the work and, with its aluminum housing, weighs but 19½ pounds.

is compound wound. In other words, the magnetic poles of the field are energized by means of two sets of windings; one of which is connected in series with the armature and the other in parallel with it. The effect of this method of winding is to



ADLAKE AUTOMATIC REGULATOR

maintain the voltage practically constant regardless of the amount of load which is being carried by the external circuit. The type of instrument is a standard one in electrical work, and its properties are well understood.* One special feature which is embodied in its construction, however, is the fan, which is employed both to keep the clutch members from overheating and also to maintain the proper temperature in the windings. Radial blades, cast on the back of the clutch disks, serve to secure the required amount of ventilation, pure air being drawn through openings in the



ADLAKE-NEWBOLD DYNAMO

front end of the machine and carried over the armature, through holes in the clutch members and expelled through orifices in the sides and bottom of the casing at the opposite end.

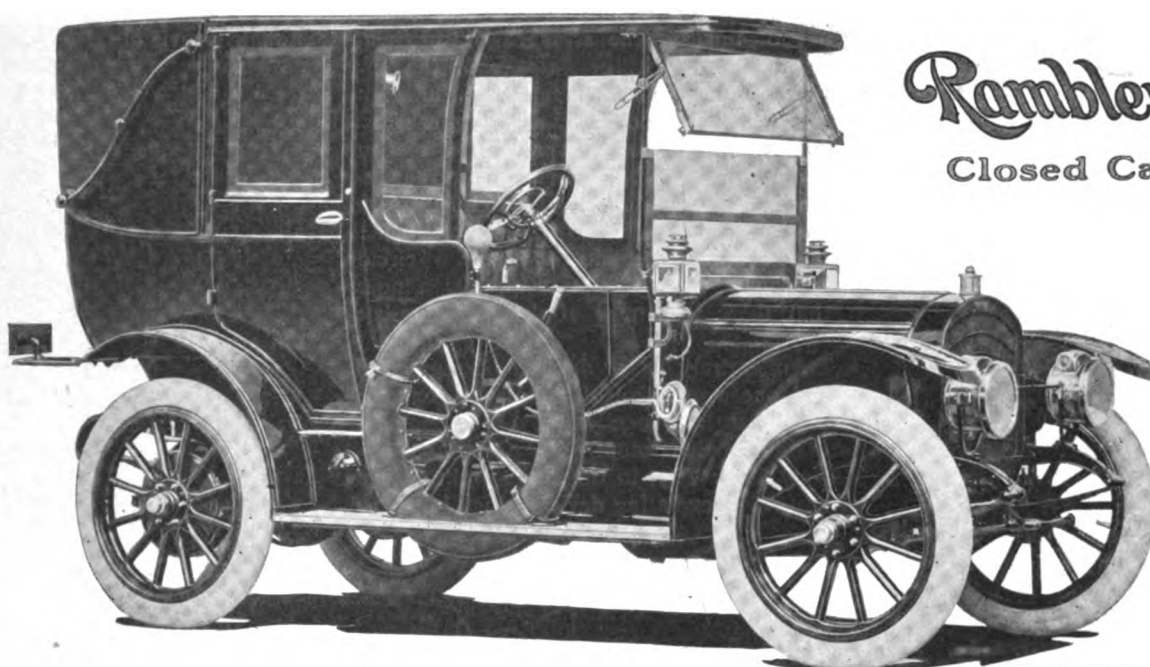
When the engine is at rest the lamps are fed by a storage battery, which, as it is intended only to supply the side and tail lamps, need not be of large capacity

When the engine is started the dynamo voltage gradually builds up until it equals that of the battery when an automatic cut-out comes into effect to close the dynamo circuit, thus allowing the dynamo to feed the lamps and also to charge the battery. Such is the arrangement of the switches that when the dynamo is charging the battery alone the dynamo acts as a shunt-wound machine, which is to say, that its field windings are in parallel, or shunt, connection with the armature, in consequence of which the current generated tends to decrease as the battery approaches complete charge, the effect being that of a "taper charge," as it is termed.

If at any time the speed of the generator falls below its normal speed, owing to a reduction in the speed of the engine, the cut-out again comes into action to break the dynamo circuit. This is necessary because, as the dynamo speed decreases, the voltage of its output will fall to a point where it is lower than that of the battery. Without some special provision, the battery then would be drawn upon to supply current to the armature of the dynamo, since electric current always flows from points of high potential, which is measured in volts, to points of lower potential.

The cut-out is exceedingly simple in its mechanical construction, consisting merely of an electro-magnet with a compound winding and movable armature, which actuates a plain switch. When the armature speed is below normal and is increasing, the voltage builds up until it becomes sufficient to energize the magnet of the cut-out through the finer of the two sets of windings. The armature, being attracted by the magnet, is drawn toward it, with the effect of closing the circuit and permitting the dynamo to feed the lamps and battery. When the dynamo speed again falls below normal and its voltage falls below that of the battery, the latter sends a reverse current through the coarse windings of the magnet, thus weakening its pull on the armature until the circuit is finally broken. An important point in the action of the cut-out is that it cuts the dynamo in at an armature speed corresponding to about 12 miles an hour car speed, but does not cut it out until the armature speed has fallen to a point corresponding to about eight miles an hour. Were the cutting-in and cutting-out action to take place at the same speed, it is held, there would be some tendency for the circuit-breaker to "flutter," causing unnecessary wear at the contact points and also rendering the action more or less uncertain. The same battery that is used for lighting may be employed in connection with any standard form of double or dual ignition.

It will be observed that one of the most important features of the system just described is the method of regulation. And it may be said that it is the variety of views of this single problem that is re-



Rambler
Closed Cars

Rambler
Sixty-three
Town Car

WITH a closed car the charm of motoring may be enjoyed throughout the winter. Daily rides may be taken in comfort, regardless of the weather. Necessary errands become a pleasure. With storm curtains between the glass front and cab seats, protection is afforded all passengers. On pleasant days the top may be folded back. The Spare Wheel eliminates worry about tire trouble. It can be so easily and quickly changed, regardless of snow, water or ice. The thirty-six-inch wheels with $4\frac{1}{2}$ -inch tires; seven-eighths rear springs, with shock absorbers, produce gratifying comfort. The trimming is leather inside and out. Seating capacity seven. Flexibility provided by the offset crank shaft and straight-line drive, that permits operation in high gear no faster than a man usually walks, particularly adapts this car to town use.

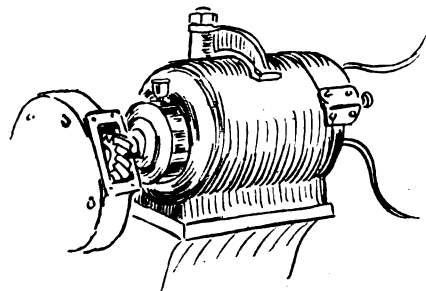
Rambler closed cars are made in landaulet, limousine, town car and coupe styles. You may inspect them at Rambler branches and dealers stores in principal cities.

The Thomas B. Jeffery Company

Main Office and Factory, Kenosha, Wisconsin
Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco

New York Dealers: The Rambler Automobile Co.
of New York, 38-40 West 62nd Street, New York

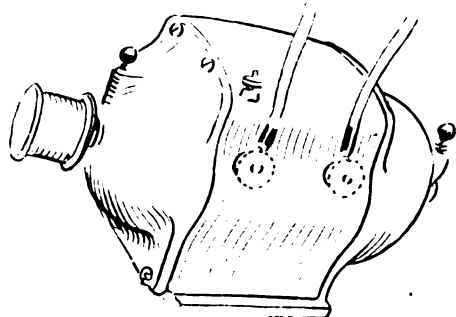
sponsible for the chief points of difference between the several systems that are now on the market. In the Adlake-Newbold system, for example, which is a reproduction on a small scale of a railway lighting system which its builder, The Adams & Westlake Co., Chicago, Ill., has been pro-



APPLE DYNAMO INSTALLED

ducing for many years, the regulation is electro-mechanical in its action. Three sizes of dynamo are made, which develop their full loads at 460, 550 and 825 revolutions per minute, respectively.

The dynamo is positively connected with the engine, so that the armature speed always is proportional to and fluctuates with the speed of the engine. It is shunt-wound, which is to say, as already explained, that its field windings are connected in parallel with the armature. The ordinary effect of this arrangement would be to make the output vary directly with the speed and also to cause an increase in the resistance of the external circuit, such as would be caused by turning on more lights to cause an increase in the voltage, while a decrease in the external resistance would cause a decrease in the voltage developed at the terminals of the machine. To counteract this tendency and cause the machine to deliver its output at constant voltage, as well as to balance its current output against the load requirements, a special form of regulator is employed which automatically compensates the undesirable properties of the



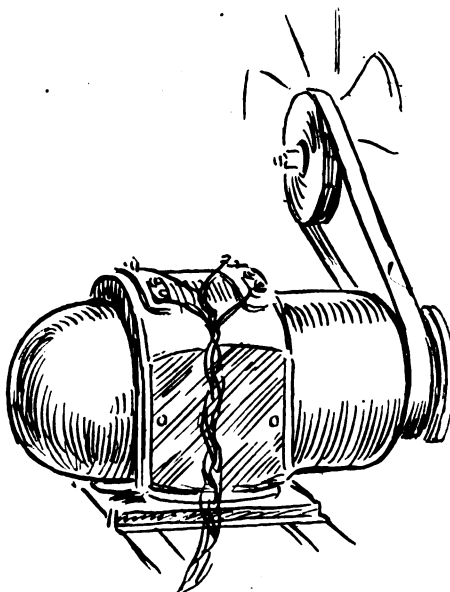
GEISZLER BROS. DYNAMO

dynamo by inserting a variable amount of resistance in the field circuit.

The regulator, which is shown in one of the accompanying illustrations, consists of a rectangular housing within which is a solenoid, or coreless coil containing a movable plunger. A portion of the dyna-

mo current passing through the solenoid causes the plunger to be attracted and drawn down into it by an amount which is proportional to the strength of the magnetic field which the passage of the current sets up. The movement of the plunger, which is opposed by a spring, causes a contact arm to swing over a series of contacts, thus cutting in or out of the required amount of resistance. There also is an automatic cut-out switch, which comes into action to break the dynamo circuit when the voltage falls to so low a point that there is danger of draining the battery.

An entirely novel method of regulation, and one suggestive of a style of construction that has been employed in magneto design is that adopted by Geiszler Bros., New York City, in their new lighting system. The regulating device, which is termed

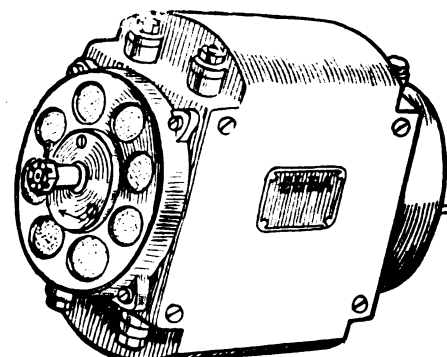


WARD LEONARD DYNAMO

a "floater," consists of a ring of magnetic iron which is mounted between the armature and the field in such a way that it is free to rotate through a small arc but ordinarily is held in one position by spring tension. As the armature revolves the "magnetic drag," which is caused by the action of generating the current, causes the ring to be displaced, much as the movement of a small magnet causes its "keeper" to follow it. The effect is to increase the natural distortion of the magnetic field, which also is caused by the armature rotation, and so to decrease the effective strength of the field. This, in turn, has the effect of reducing the output of current in proportion to the amount by which the floater is displaced from its normal position.

The machine is of the shunt-wound type, and, consequently, its output would tend to vary with the speed of the armature were it not for the steadying effect of the regulator. The system includes a battery,

which is charged automatically by the dynamo and which serves to supply the lamps when the engine is not running. Suitable provision also is made to cut out the dynamo at low speeds and prevent the

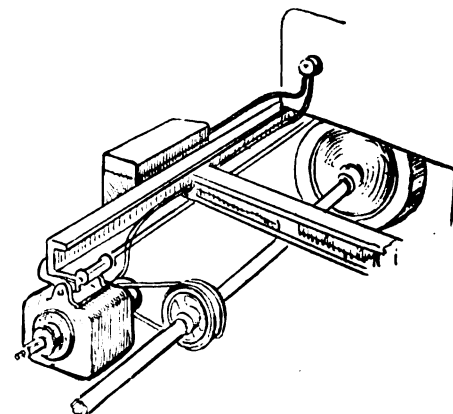


THE ELBA DYNAMO

battery from discharging through it, and to prevent the battery from being overcharged.

One of the simplest of the new systems, in point of mechanical and electrical construction, is that which is produced by the Ward Leonard Electric Co., Bronxville, N. Y. The dynamo that is employed is of the simple, shunt-wound type, and in no way differs from machines of the same type that are commercially employed for other purposes, the idea being that it is unwise to put into the hands of the motorist a device the properties of which are not thoroughly understood, or which might not be overhauled readily by any repair man of ordinary intelligence and a general knowledge of electrical machinery.

To protect the battery two limit switches are employed, which are mounted in a casing which is placed in the top of the battery box. The switches, which are simple electro-magnetic cut-outs, also are of simple and easily understood construction, in



INSTALLATION OF ELBA SYSTEM

keeping with the general idea carried out in the design of the entire system. One is arranged to break the field circuit when the dynamo speed falls so low that the voltage generated is lower than that of the battery, while the other is actuated when the am-

By far the most conspicuous car in the high-price division is the Cunningham, made by James Cunningham & Co., big carriage builders at Rochester for over seventy years—N. Y. Mail.

At no Automobile Show before has one car caused so much comment and so completely pre-

The Cunningham car made in Rochester, and sold in New York by the Whiting Motor Company at 1802 Broadway, is one of the real interesting touring car exhibits, and a crowd is to be found at all times around the Cunningham chassis.—N. Y. Globe.

dominated the field as the Cunningham at the Palace Show in New York.

Any one familiar with automobile construction cannot fail to realize even after a cursory examination, why this is true. The

Cunningham

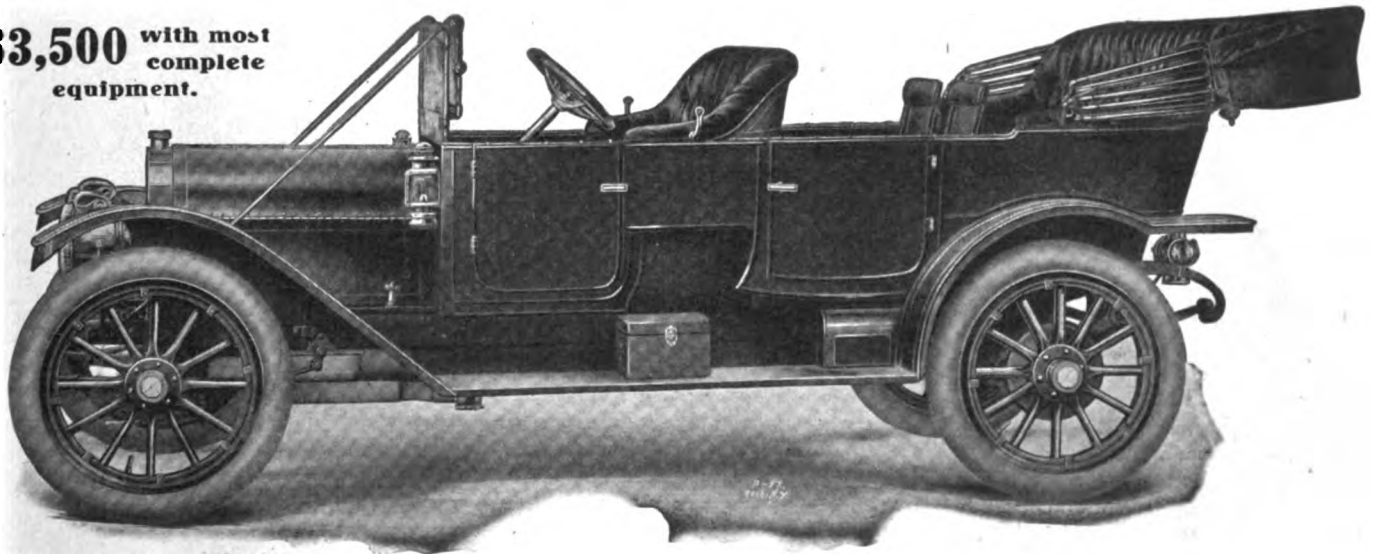
Car, in no feature, is an innovation or an experiment.

It is such a masterful and clever combination of the up-to-date and accepted practice that it completely eclipses everything in its field.

This is a pretty strong statement, but as the most extravagant claims The Cunningham Company can possibly make have already appeared in print, editorially, written by the best posted writers on the subject, it does not seem to be out of place to repeat and emphasize these facts.

JAMES CUNNINGHAM, SON & CO., Desk D, 16 Canal Street, Rochester, N. Y.
Chicago Branch, 2021 Michigan Ave.

\$3,500 with most complete equipment.



perage of the battery reaches the point of maximum safe charge, thus protecting it against injury from overcharging.

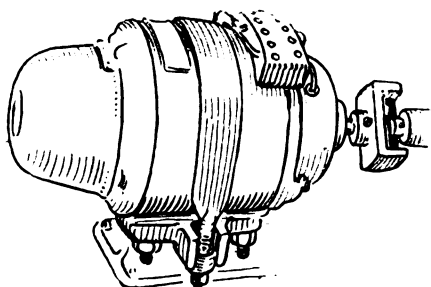
One of the oldest systems on the market is the Aplco, which is made by the Apple Electric Co., Dayton, O., and which is marketed with the express idea that its battery is to be used for ignition purposes. Such dual use of the battery, of course, is admittedly possible with a majority of the new systems in use, but in this particular instance ignition service is advanced as one of the primary features of the system. It is possible to employ it with any jump spark system without change, it is even claimed that with any of the synchronized single spark non-vibrating systems now on the market "even better results can be had than from magnetos, especially at low engine speeds."

The governing function of the Aplco system is vested in a "load regulator" so-called, the construction of which is surrounded with more or less secrecy, but which is electrical in its action, and which is mounted within the dynamo casing together with a cut-out switch for the protection of the battery. No mechanical governor is used on the armature shaft, the armature speed being proportional to the output down to a range of 2 to 16 amperes and takes care of charging the battery, which is "floated on the line." The dynamo is of neat and compact construction and weighs complete approximately 24 pounds.

For purposes of ventilation the armature of the Elba generator, which is built by the Willard Storage Battery Co., Cleveland, O., is equipped with a small fan, which is carried on the rear end and which serves to draw cold air through screened openings at the opposite end and over the windings of the armature and coil. This feature is particularly important in a machine of the type employed, which runs at speeds proportional to those of the engine and which, on this account, and because of its special construction, otherwise might be liable to excessive temperature rises. Regulation is accomplished without the aid of mechanical or electro-mechanical devices, the machine being especially built to yield a practically constant output regardless of variations in speed or load. As a matter of fact the characteristic curves of the system show that between 1,400 and 4,000 revolutions per minute, armature speed, the current falls by about a quarter of an ampere, while the voltage remains practically constant at 6.75.

The cut-out switch, which is used to prevent the battery from discharging back through the dynamo when the speed of the latter falls below normal, is of the simple polarized type, and acts by gravity. Regardless of the amount of equipment that may be required at the time of installing the system, it is constructed with sufficient dynamo and battery capacity to carry a

complete electrical outfit, including head, side, number, tail, dome, meter and trouble lamps. The assumption is that the average motorist sooner or later will want to install on his car about everything in the way of electrical accessories that the market affords. To save the bother of exchanging the system for a larger one at a later time,

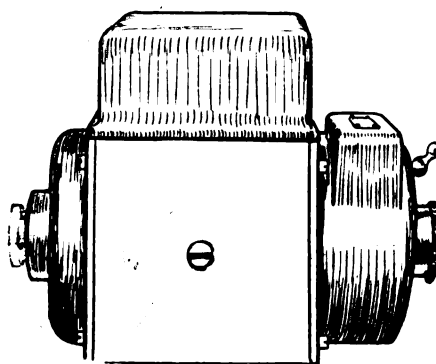


NORTH EAST DYNAMO

it is deemed prudent to make the capacity ample for the maximum possible load.

To prevent the battery from discharging into the armature and field circuits when the speed of the latter is reduced, the generator which is built by the North East Electric Co., Rochester, N. Y., for its lighting system is equipped with what is termed an "electric valve." The "valve," which in common parlance would be termed a cut-out, is a little out of the ordinary in that it never "breaks a circuit," its action always coming at an instance when no current is flowing through the switch contacts.

In order to understand the principle of the thing it is necessary to recall the circumstance that electric current invariably flows in a direction from high potential to low potential. When the armature is run-



DYNETO GENERATOR UNIT

ning at, or above, its normal speed, therefore, the potential at the dynamo terminals is higher than that at the battery, consequently current flows from the dynamo to the battery as if may be required for charging purposes. When the speed of the armature falls below its normal, however, the voltage of the dynamo falls below that of the battery, as a result of which current tends to flow in the opposite direction. It is evident, therefore, that a certain point must be reached at which for a brief in-

terval while the dynamo speed is either increasing or decreasing no current is flowing. At just that instant the cut-out comes into effect, a small arm being thrown over by a relay causing the battery circuit to be opened or closed, as the case may be. As a result of this arrangement, there is no arcing at the contact points, and the life of the switch is measurably prolonged.

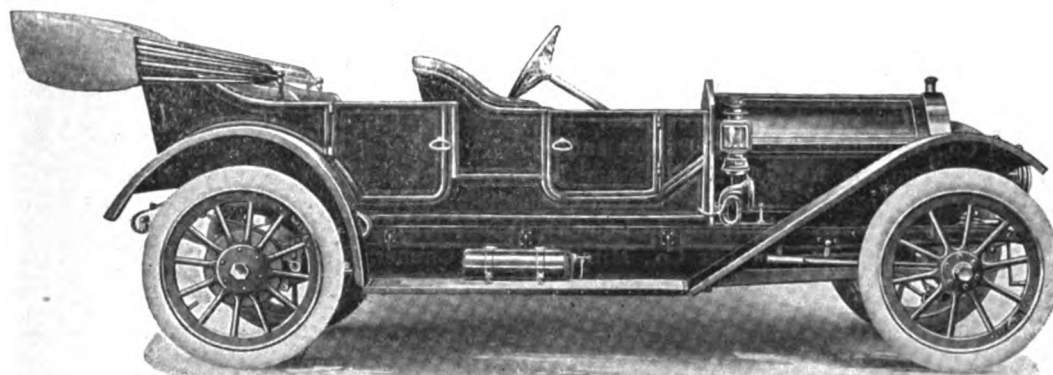
The North East system is constructed without either mechanical or electro-mechanical regulating devices, the generator being built to give a constant output at all speeds. To protect the battery against overcharge an electro-gas cut-out is employed, the gassing of the lead type of battery when fully charged being taken advantage of to operate a sort of safety valve, the movement of which serves to break the circuit. With the Edison battery, this part of the outfit is omitted.

One of the newer systems, one so new, in fact, that it did not appear at either of the national shows, is the Dyneto, which is built by the Dyneto Electric Co., Syracuse, N. Y. The compactness of the single unit which comprises the entire system is its most striking feature. The generator measures only $9 \times 4\frac{3}{4} \times 6\frac{1}{2}$ inches, complete, and weighs but 19 pounds.

The entire regulation and protection of the system is vested in a controlling unit, as it is called, which is mounted in a casing attached to the dynamo. If desired for any reason, this unit may be detached from the dynamo, however, and mounted anywhere else about the car, either on the dash or in some more remote location. The unit comprises an electrical governor and a cut-out switch. The latter is so contrived that the shunt winding of the dynamo is cut out when the switch is closed, its only purpose being to assist in "building up" the field when the dynamo is starting. It is claimed to be the only device of its kind in which this particular feature is embodied.

Another new system, and one which possesses the rare distinction of serving both ignition and lighting directly through the generator, which is its most important feature, is the Delano, which, as was told in these columns recently, is the product of the newly formed Electro Lighting Co., Indianapolis, Ind. Unlike other lighting or lighting and ignition systems, the Delano is designed in such a way that the generator is directly connected to the engine and runs at crank shaft speed. It is regulated electrically, being free from electrical or electro-mechanical devices of any sort, and is designed to give the battery the correct form of "taper charge." The battery is protected from overcharge by means of a reverse-current, self-restoring circuit-breaker of approved pattern. While the lighting current, as a matter of course, is of low tension, the ignition current, which is derived from the same source, is of the true high tension type.

A New Pace in Motor Car Values Has Been Made By The **McFARLAN SIX 1911**



Big Six Model 32, price complete, with Fore Doors and Mohair Top, \$2500; 128-inch Wheel Base, 36-inch Wheels, Unit Power Plant. Multiple Disc Clutch 50 to 60 H. P. Cylinders, 4 x 5. Same Chassis fitted with Runabout Type Body, Fore Doors, Mohair Top, complete, \$2500. We also make a Touring Car, 6-Cylinder, 3½ x 4, 35 to 40 H. P., complete with Top, \$2100. Runabout, same Chassis, \$2000.

The man today who measures motor car values by the standards set by the popular priced, widely advertised four cylinder cars of 1908, 1909 and 1910, will discover to his profit, if he will investigate, that a new era in construction and a new era in values was ushered in some time ago by The McFarlan Six.

A little investigation will prove for instance that you can buy a McFarlan Six for practically the same money a popular priced four costs.

And this doesn't mean a car "skimped" and cheapened to meet a price. It means a highly developed, highly finished, high powered car, made of the very best materials and designed right up to the minute.

Any dealer, or prospective buyer, who will write for our literature, will readily recognize after reading that the McFarlan Six is the greatest motor car value in the market.

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The New York Sun of January 2 commenting on the Automobile Show exhibit says of the McFarlan:

The Big Six and Little Six McFarlan cars come in for a great deal of notice. On the big car the foredoors are removable. In the smaller cars they are fixed. Prices of these cars range from \$2,600 down to \$2,000, there being no less than six cars in the line. The smaller car has a 35-40 horsepower engine; the other a 50-60. Dual Ignition is provided on both, with Stromberg carbureter. There is an option of Schebler in the larger machine. Both cars have three speeds forward and one reverse. The cars are made with attractive bodies, Model 34 of the Big Six, a racy looking runabout with a cosy top, being particularly striking.

McFarlan cars were entered in the races at Indianapolis on September 5, the first appearance of the Indiana machines in competition. They did very well indeed. A stock car made 200 miles in 183 minutes 16 seconds, and averaging seventeen miles to a gallon of gasoline.

Delaware Delays Action.

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THE McFARLAN MOTOR CAR CO., Desk D, Connersville, Ind.

Local Show Circuit Now Well Under Way

Buffalo Clothes its Show in White; 51 Brands of Car on View

In an attractive setting of white the ninth annual Buffalo (N. Y.) automobile show was opened on Monday evening last, 6th inst., in the Broadway Arsenal. It is under the auspices of the Buffalo Automobile Trade Association, and will continue until the end of the week. An immense sunburst center piece of colored lights, white draping arranged to present a billowy effect, and signs of white and gold constitute the decorative effects.

Of the 51 makes of cars on view, only one is new in the sense of not having been shown before. It is the product of the E. E. Denniston Co., of Buffalo, and is a commercial vehicle mounting a two cylinder opposed water cooled motor rated at 15 horsepower; three speed selective transmission is used and final drive is by shaft, the power being transmitted by means of a multiple disk clutch.

The cars on view and their exhibitors are as follows: E. E. Denniston Co., Denniston commercial cars; Buffalo Overland

Co., Overland; Albert Poppenberg, Paige-Detroit and Warren-Detroit; Densmore Co., Packard; Ralph E. Brown Co., Winton and White; Babcock Electric Carriage Co., Babcock electric; Brunn Automobile Co., Peerless, Haynes and Brunn electric; Franklin Automobile Co., Franklin; Meyer Carriage and Automobile Co., Pullman; Mason B. Hatch, Chalmers-Detroit, Hupmobile and Hupp-Yeats electric; Kane Motor Supply Co., Cadillac; Pierce Automobile Co., Pierce-Arrow; Thomas Motor Co., Thomas; Sanderson & Burkhardt, Firestone-Columbus; Bison Motor Car Co., Abbott-Detroit and Krit; F. A. Ballou Co., Selden, Brush and Jackson; Centaur Motor Co., Oakland and Oldsmobile; Buick Motor Co. (Buffalo branch), Buick; Mitchell Motor Car Co., Mitchell; J. A. Cramer, Stoddard-Dayton; Dixon Motor Car Co., Velie and De Tamble; F. A. Sherman & Co., Interstate; Co-Operative Motor Car Co., Stevens-Duryea, Pope-Hartford, Knox and Hudson; Ford Motor Co., Ford; Detroit

Electric Co., Detroit electric; Poppenberg Motor Car Co., Reo, Everitt and Parry; Lewis Engle, Jr., Cartercar; United Motor Co., Maxwell, Columbia and Sampson trucks; Windsor Motor Car Co., Elmore; Chisholm Sales Corporation, Locomobile; American Motor Truck Co., American trucks; E-M-F Co., E-M-F; Werick Bros., Schacht.

Included in the list of accessory exhibitors are the following: Jos. Breardt, Automobile Club of Buffalo, Jaynes Auto Supply Co., Class Journal Co., Kleinhans Co., George C. Danford & Sons, E. A. Green, Iroquois Rubber Co., Charles E. Miller, Buffalo Maintenance Co., F. S. Bowser & Co., Frey Auto Supply Co., Polson Mfg. Co., Alder-Sampson Co., Robertson-Cataract Co., Brunn & Co., Hays-Schoepflin Co., Edgar C. Messersmith, Joseph G. Schmidt, International Acheson Graphite Co., E. T. Parke, Frontier Rubber Co., H. C. Tanner, Cataract Refining Co., Wayne Oil Tank & Pump Co., Motor Publishing Co.

Troy's Mayor Presses the Button at City's First Automobile Show

Troy had an automobile show last week, and as it was the first affair of the kind to be staged there, it was quite an event in that New York town. It was opened at 8 o'clock on Monday evening, 30th ultimo, when Mayor Elias P. Mann pressed the button usually supplied for the purpose, and the state armory became a blaze of glory and light, and the stamping ground of the advance guard of an army of sight-seers which thronged the building until the close of the exhibition on Saturday evening, 4th inst.

Surrounded by a miscellaneous assortment of accessories a single aeroplane reigns supreme in the basement, the main floor of the armory being given over entirely to the display of automobiles, of

which five dozen brands were represented in the exhibits of 27 local dealers. Among the exhibitors and the cars they showed were the following: Troy Motor Carriage Co., Mitchell, Speedwell and Kelly truck; Bolton-Myers Auto & Truck Co., Parry and Haynes; Burdick & Hartwell, Alco, National, Maxwell, Abbott-Detroit, Hupmobile, Columbia and Alco and Sampson trucks; Scott D. Nichols, Premier and Ford; J. E. Folk, Brush; Payne Automobile Co., E-M-F, Flanders, Studebaker and Garford; Hudson Valley Auto Agency, Winton; Wilbur Auto Sales Co., Regal, Cole, Corbin and Kissel; Wilson Automobile Co., Pullman, Fiat and Chase trucks; Betts Auto Co., Oldsmobile and Reading; Kentselaer Automobile Exchange, Moon;

Troy Everitt Co., Everitt; Troy Motor Vehicle Co., Cortland trucks; C. H. Abbott, American and Stanley steamers; Troy Automobile Exchange, Pierce-Arrow and Chalmers; Trojan Garage, Locomobile, Stoddard-Dayton and Buick; George H. Snyder, Stearns and Velie; Oliver Du Charme, Pennsylvania and Auburn; Fred V. Clute, Pope-Hartford; Albany Garage Co., Simplex, Palmer & Singer and Peerless; C. S. Ransom, Lozier, Hudson and Stevens-Duryea; Rayno Bros. & Reid, Jackson and Marmon; J. A. P. Ketcham, Packard; George M. Wait, Elmore; Albany Motor Car Co., Thomas and Cadillac; Albany Rubber Tire Co., Selden; United Motor Albany Co., Columbia and Sampson trucks.

Scranton, in the Coal Country, Likewise Sees its First Show

Scranton, which is in the coal region of Pennsylvania, also has had its first automobile show, which, if not larger, was none the less satisfying from the Scranton point of view. The main floor of the Town Hall, in which building the exhibition was staged by the Scranton Automobile Association during the week of January 30-February 4, was given over to the display of automobiles and chassis, and the gallery was occupied by accessory exhibitors. Of the 23 exhibitors, 15 showed complete cars, embracing 29 brands; seven displayed

accessories, and one exhibited motorcycles. The solitary motorcycle exhibitor was the Motorcycle Sales Co., and the seven accessory exhibitors were as follows:

Scranton Automobile Co., Atlantic Refining Co., Wayne Tank Co., Kitsee Battery Co., C. B. Scott, Keystone Lubricating Co., Standard Top Co. and the Tiona Oil Co.

Automobile exhibitors and the cars they had at the show were as follows:

Anthracite Motor Car Co., Overland and Corbin; Lackawanna Auto Co., Packard,

Chalmers and Hudson; Electric City Auto Co., Lion, Rambler, I. H. C. and Atterbury trucks; Keystone Auto Co., Marmon; V. A. Simrell, Speedwell, E-M-F and Firestone-Columbus; C. B. Scott, Stevens-Duryea; A. M. Baker, Jr., Hupmobile; John H. Fleming, Premier and Cadillac; Scranton Automobile Co., Peerless, Winton, Buick, Franklin and Mack trucks; Peter Beyreut, Haynes; Giles & Fly, De Tamble; M. R. Zehnder, Stanley steamer; Conrad Bros., Ford and Brush; P. J. Needham, Maxwell, and Phil Rinsland, Reo.

The Automobile Makers who did not develop with the business are no longer in the business.

Past and present developments show that

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That car will necessitate a RUST-PROOF sheet.

Alumaloyd Sheets Are Rust-Proof

In addition, they can be painted and finished in less time and with less material than uncoated steel sheets.

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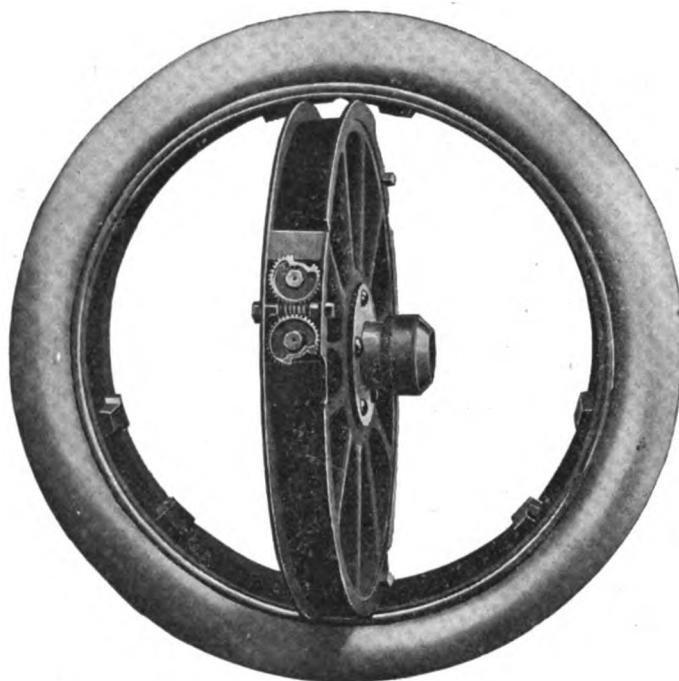
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No Bunk

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Owners of **Peerless, Packard, Pierce-Arrow, Lozier, Chalmers, Cadillac, Benz, Pope-Hartford, Winton** and many other makes of cars are ordering us to equip their individual cars with our **Demountable Rims**, and in a great many instances are specifying them when ordering new cars.

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I consider the Booth perfect, and use them exclusively on all my cars. —BARNEY OLDFIELD.

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The Booth Demountable Rim Co.

CLEVELAND, OHIO

RECENT PATENTS.

975,588. Pneumatic System for Automobiles. Robert S. Wallace, Forney, Tex., assignor of one-third to Grover G. Fix, Forney, Tex. Filed Dec. 23, 1908. Serial No. 469,024.

The combination of a rotary drive shaft, a motor for rotating said shaft, a pinion fixed on the shaft, a driven shaft formed with a crank, a sleeve rotatable with the driven shaft and slidable longitudinally thereon, a gear wheel carried by the sleeve and adapted to mesh with the pinion to transmit power from the drive shaft to the pinion to transmit power from the drive shaft to the driven shaft, a lever for sliding the sleeve on the driven shaft to move the gear wheel into and out of mesh with the pinion, a pair of compressed cylinders extending transversely reciprocatory move-

ment within the cylinders, piston rods secured to the pistons and projecting through the adjacent ends of the cylinders, guides provided at the adjacent ends of the cylinders, cross heads secured to the projecting portions of the piston rods and movable in the respective guides, pitmen connecting both piston rods to the crank, a reservoir for compressed air, and a pipe coupled at one end to the reservoir and bifurcating at its other end with the bifurcations communicating with the remote ends of the compressor cylinders.

975,629. Combined Clutch and Brake. Dominique Miolans, Paris, France. Filed Dec. 22, 1908. Serial No. 468,787.

In a clutch and brake mechanism, a frame, a brake block fastened to the said frame, a driving shaft, a flywheel mounted on said driving shaft and provided at its center with

a shaft bearing, a driven shaft mounted at one end in said flywheel bearing, a bearing for the other end of the driven shaft fastened to the brake block, longitudinally displaceable clutch and brake disks carried by the driven shaft, springs holding the clutch members normally engaged and the brake members normally disengaged, in combination with separately operated levers controlling the clutch and brake springs, substantially as set forth.

975,694. Automobile Tool. Frank Knight, New Haven, Conn. Filed Nov. 12, 1909. Serial No. 527,709.

A tool of the crossed handle plier type comprising handle members, one of which is provided with a pivot pin, the other being provided with a slot having spaced apart recesses to receive said pin, whereby an adjustable pivot connection is formed,



A Marvel of Strength

That justly fits the 1911 Monitor. Its powerful direct shaft drive transmits 90% efficiency to the rear wheels.

To increase this great pulling power, the gear ratio has been reduced to 7-1. This enables the Monitor to negotiate all sorts of road conditions, through sand, mud or snow with even greater ease than ever before. Such a drive also does away with loud noise, flying grease, and broken chains. The first power car to successfully use the shaft drive was the

MONITOR Commercial Car

for each system. This produces a positive ignition and avoids the many vexing ignition troubles.

Positive lubrication is also provided by a base oiler run by a gear pump which throws a continuous stream of oil on each bearing. No exposed oil tubes to break or clog up. A selective type, sliding gear transmission with three speeds forward and one reverse is another 1911 feature. These gears are of imported German chrome nickel steel case hardened—almost impervious to wear.

The 1911 motor has been increased to 24 h. p., and fitted with a governor that prevents exceeding 15 miles an hour empty, but allows fully that speed under load. Racing the engine and abusing the car are impossible.

The ignition is now composed of a high tension magneto and timer entirely separate from one another, a double set of spark plugs being used

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one of said handle members being provided with a tapering lug forming a cotter pin remover, the other handle being provided with a shortened tool extremity, the last-mentioned handle being of such length that it will be protected by the projecting cotter pin remover on the other handle when the

pivot pin is in one recess, the jaws of said tool being adapted to contact when the pivot pin is in the other recess, whereby the handle members are held apart and the said shortened tool extremity of one handle forms a guard for the cotter pin remover on the other handle.



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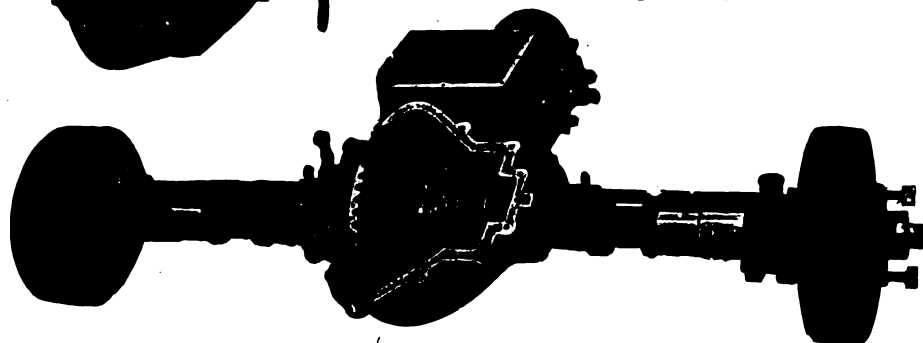
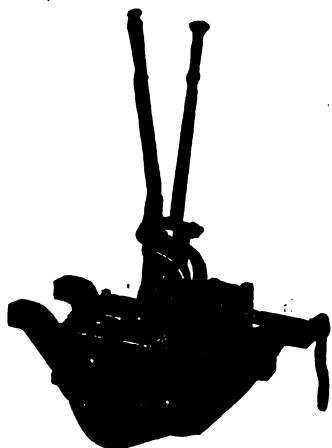


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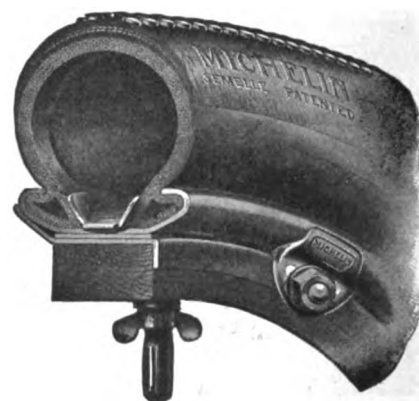
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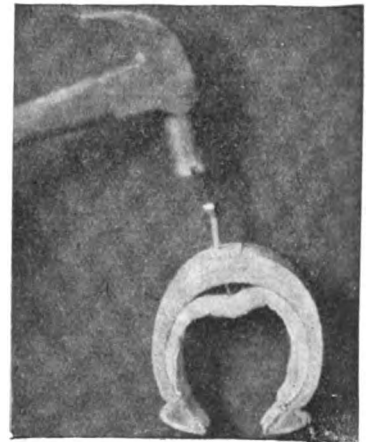
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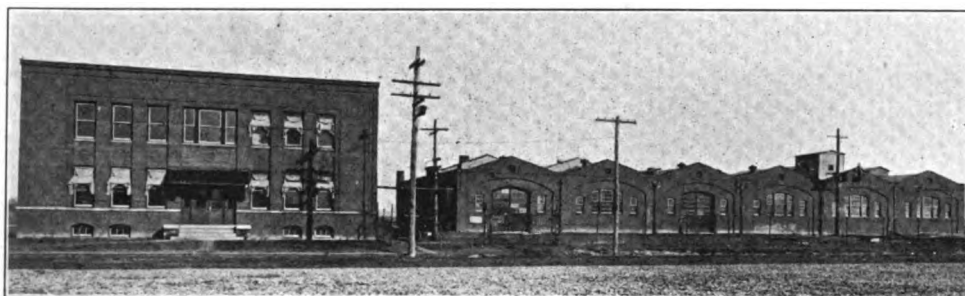
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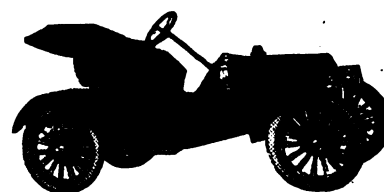
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436 Housatonic Ave., Bridgeport, Conn.

Last Obstacle to Women Driving Cars is Removed

Punctures, Blowouts, Tire Troubles by the Score—With Which No Woman Can Successfully Cope—Have Barred Many From Enjoying the Pleasure of Driving an Electric. Those Who Dared Tire Troubles Faced Humiliating Predicaments. Hard Rubber Tires to Others Meant Rough Riding, Jars and Jolts.

But today any woman can drive a car with sense of perfect security. No tire troubles. No punctures, no blowouts, no rough riding on tires of hard rubber.

For the Motz Trouble-proof Cushion Tire has the resiliency of the pneumatic tire. Note its resiliency from the accompanying illustration. Note how the slantwise bridges, undercut sides and double treads give it pneumatic resiliency. As a consequence, the path of the woman driver of a car has been cleared by the

MOTZ Cushion Tires

Dealers and agents find the Motz is the fastest-selling tire for electrics on the market. For it is already the best known electric tire. This fact is due to extensive advertising, in large space, to owners of automobiles.

Motz Tires average better than 10,000 miles. One set traveled 24,000 miles. A score or more, which have been brought to our attention, have traveled from 15,000 to 20,000 miles.

Tire cost with the Motz is 4-10 of one cent per mile. With pneumatic tires the cost is 5 to 20 cents per mile. The Motz consumes no more current than high grade pneumatic tires.

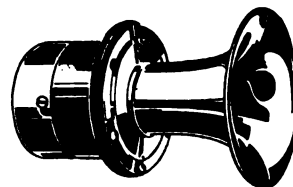
We also make Motz Trouble-Proof Tires for gasoline cars, physicians' cars, taxicabs, commercial trucks, etc.

The Motz Tire and Rubber Co., 55 Bertch St.
AKRON, OHIO
See our Exhibit at the Shows—Chicago, Space No. 77; Boston, No. 55. (40)



The Improved MONOPLEX Electric Horn

\$12 and \$15 Complete



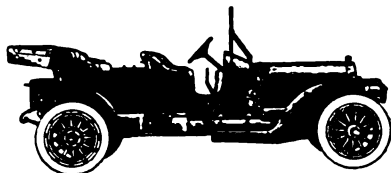
A true warning signal with a powerful tone that compels attention without giving offense.

ATWATER KENT MFG. WORKS

PHILADELPHIA, PA.



Knox
Automobile Co.
Springfield, Mass.
Member A. L. A. M.
Catalog.



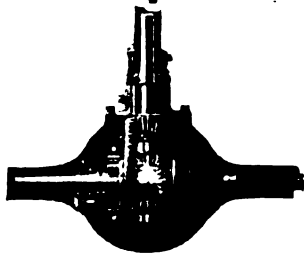
Always the Symbol of High Grade Products.

Built in a wide variety of models suitable for every motor need.

From 3000 to 6000 dollars in price.

Hyatt

ROLLER BEARINGS are correct in design—they are made of thoroughly tested materials—are carefully inspected—wear longer—and have greater practical value than any bearing made.



Hyatt Roller Bearing Co.
Detroit, Michigan

BOWSER Gasolene Storage Systems

Keep oil perfectly clean, safe and strong as when purchased. Systems Suitable in Style, Size and Price—for your individual need.

We make the lowest priced and we make the best systems. Write for our new book—34. It's free and of interest for you.

S. F. BOWSER & CO., Inc., Ft. Wayne, Ind.

Boston, New York, Philadelphia, Chicago, San Francisco, Toronto, St. Louis, Minneapolis, Dallas, Atlanta.

VALVELESS

Amplex

The one car in America that offers you all that a high grade, high power car can offer; and in addition the tremendous advantages in operation and maintenance which only a perfect valveless motor can give.

SIMPLEX MOTOR CAR COMPANY

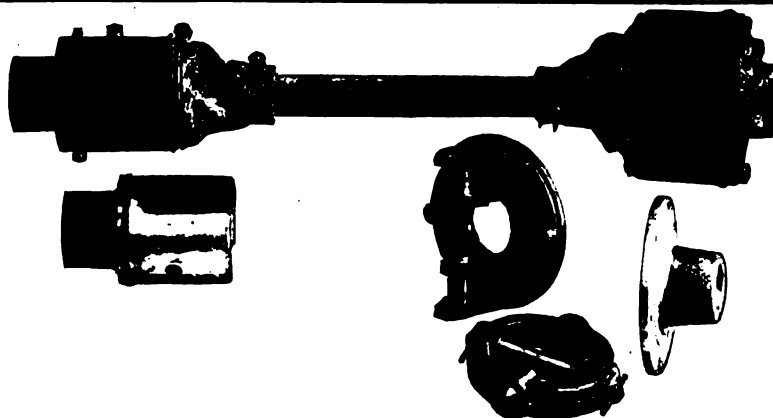
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Mishawaka, Ind.

Licensed under Selden patent.

"Hartford" Universal Joints

Type F-600



The trunion block or slotted yoke type joint takes the slip or lateral motion and the ring and pin type joint at the front end the principal angle.

All wearing surfaces extra large and hardened and ground. Grease tight and dust proof.

Our prices extremely low.

**The Hartford
Auto Parts Company**
88 Hayslope Avenue
HARTFORD, CONN.

"RAJAH" SPARK PLUGS

IGNITION ABSOLUTELY SURE

RAJAH AUTO SUPPLY COMPANY

BLOOMFIELD, NEW JERSEY, U. S. A.

(Watnessing Station, D., L. & W. R. R.)



At the Auto Shows

notice the great number of cars equipped with

"WHITNEY" CHAINS

We shall exhibit a complete line
of High Grade Driving Chains.

THE WHITNEY MFG. CO., Hartford, Conn.

FOR LONG RANGE - FOR SHORT RANGE

SIRENO

ELECTRIC HORN

The choice of motorists who realize the need of a long range warning and the value of press-the-button operation, yet who desire not to startle or offend those whom they warn. It is the signal of a gentleman and a careful driver.

The Sireno Company
705 Taylor Building
NEW YORK CITY

FORGINGS

We specialize on FORGINGS. Let us have a look at your specifications. Also see our catalog of stock forgings always on hand.

Billings & Spencer Co.,
HARTFORD, CONN.

Abbott-Detroit

1911 MODELS
NOW READY

The Perfectly Standardized Car

ABBOTT MOTOR CO.
143 WATERLOO ST., DETROIT, MICH.

*Write for catalogue
and specifications.*

F & S

ANNULAR BALL BEARINGS

(Made in Germany)

The Dependable Kind -

J. S. BRETZ COMPANY

Sole Importers

MOTOR HALL, 250 West 54th St., NEW YORK

Packard
CABLE

Is Absolutely Sure

Don't take chances on the wiring of your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!


Just put on Packard Cable and forget all about your ignition troubles

NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY

Send for samples and prices before ordering elsewhere

THE PACKARD ELECTRIC CO., 4328 Dana Ave., Warren, O.

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MUNCIE, INDIANA



Steering Gears
Transmissions
Differentials
Clutches and
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MODEL 95—UNIT TRANSMISSION
Brake and Clutch with Raybestos-faced Discs.
25-35 H. P.



Baldwin Chains

give that kind of service which the buyer has a right to expect from chains which have been chosen because of their well-known quality; accuracy in pitch and durability being especially distinguishing features.

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Worcester, Mass.

SALESMEN—H. V. GREENWOOD, 166 Lake St., Chicago, Ill.; C. J. IVEN, Rochester, N. Y.; M. A. BRYTE, 788 Mission St., San Francisco, Cal.

"K-B" Universal Joints
FOR
COMMERCIAL CARS
PLEASURE CARS

KANT-BEAT

Made from Drop Forgings and Case Hardened Throughout.

ACCURACY, RELIABILITY AND SATISFACTION GUARANTEED

Prompt Deliveries

KINSLER-BENNETT COMPANY, Hartford, Conn.
American Distributing Co., Jackson, Mich., Western Sales Agents

Timken-Detroit Axles For Pleasure Cars

There's no use repeating that Timken Axles on a car at once stamp the car as well built. We've said that before. And for 1911 a strikingly large proportion of the better class of cars—those generally recognized as machines of practical substantial worth—will be equipped with Timken-Detroit Axles.

If your requirements are not fully cared for, write us promptly.

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Real Radiators

made of individual square tubes so much imitated in appearance, only.

FEDDERS RADIATORS

are just what they appear to be—genuine square tubes. Furnished with tubes "staggered" or Mercedes finish.

You See the Fedders on the Finest Cars

FEDDERS MANUFACTURING WORKS, Buffalo, N. Y.

Forgings for the Automobile Trade



SATISFACTION GUARANTEED

Thousands of our **Spring Clips** are now in use, having been supplied to the leading automobile manufacturers.

Have you secured our prices?

THE M. SEWARD SONS CO., New Haven Conn.

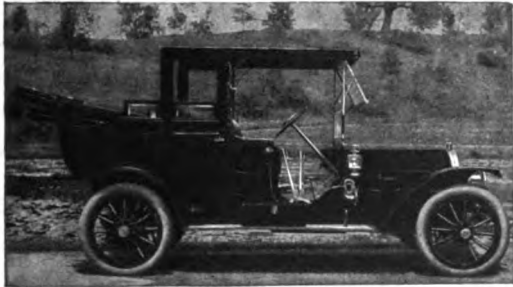
THE STANDARD UNIVERSAL RIM

Fits All Tires

THE UNITED RIM COMPANY

Akron, Ohio

Stevens-Duryea Motor Cars Built 'Round a Principle



Model "AA" Landaulet
Price \$4800.00

Apart from the general distinctive appearance, comfort, reliability and simplicity of the Stevens-Duryea, the exquisite finish in detail of body work and mechanism are other reasons which must influence you in your selection.

Let us mail you our literature.

STEVENS-DURYEA COMPANY
Chicopee Falls, Massachusetts

Mosler Spit Fire

THE PLUG
WITH THE DEEPEST CHAMBER

Leads the World

READ **NOTICE!** READ

Our SPIT-FIRE Plugs are for sale by
all legitimate dealers and jobbers.

If you cannot get a delivery—
THERE'S A REASON!

— WRITE US DIRECT —

WE CAN SHIP ON TWENTY-FOUR HOURS' NOTICE

Dealers and jobbers beware! We protect our trade mark

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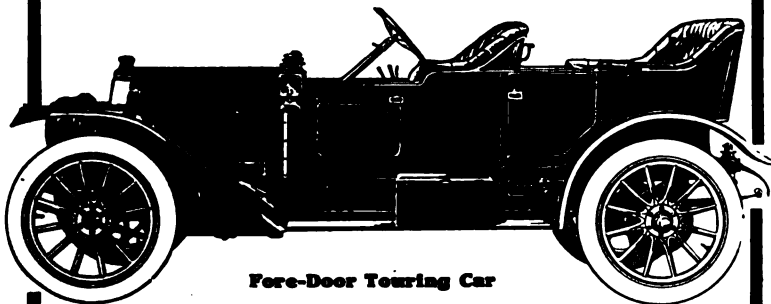
FOR YOUR PROTECTION



A. R. MOSLER & Co. 163 W 29th ST. NEW YORK.

National 40

The prestige of the repeated racing triumphs
is a valuable asset to every National dealer.



Fore-Door Touring Car

The 1911 output is limited. Our present distributors want every car we can build and more. We desire wider distribution, however, and have an attractive proposition for a few more good dealers in unallotted territory. Better wire.

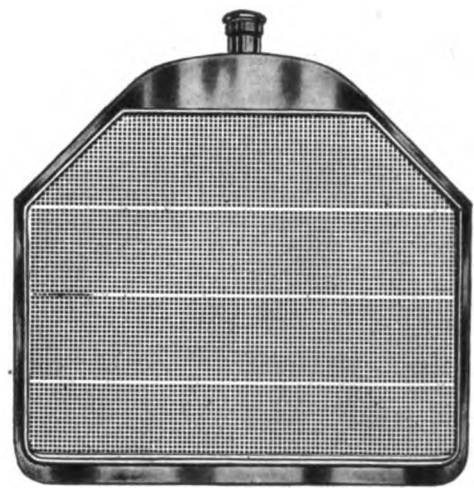
Open Touring Car, Open Toy Tonneau, Speedway Roadster, \$2,500

Fore-door Touring, Fore-door Toy, 2,000

Fore-door Seven-passenger Touring, 2,000

Luxurious Limousine, Fore-door, \$4,600; Open, . . . 2,750

NATIONAL MOTOR VEHICLE CO.
1007 E. 22d Street INDIANAPOLIS, IND.
Licensed under Selden patent.



THE BUSH RADIATOR FOR 1911

IN EFFICIENCY—The Highest
IN APPEARANCE—The Finest
IN CONSTRUCTION—The Simplest
IN SERVICE—The Most Satisfactory

"The Most Practical Radiator"

Ask those who have used them in 1909 and 1910.

THE BUSH MFG. CO., Hartford, Conn.

Empire Tires

WEAR LONGEST

EMPIRE TIRE CO., Trenton, N.J.

Regal 30

"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

\$1250

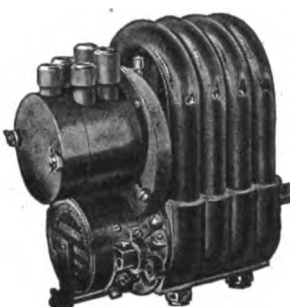
Runabout, Baby Tonneau, Touring Car, Coupe

Greatest Automobile Value in America

WRITE FOR OUR LITERATURE

REGAL MOTOR CAR COMPANY, Detroit, Mich.

Heinze High Tension Magneto



Construction—Mechanically unequalled.

Durability—Greater than the life of the car.

Efficiency—Proven by the users.


Catalogue H with full information is yours for the asking.

HEINZE ELECTRIC COMPANY
Lowell, Massachusetts

MERCER

TOURING CAR
TOY TONNEAU
SPEEDSTER

Each \$2150



Style, Luxury, Quality, Strength, Speed.


Made Right and Stays Right

Let us hear from you.

MERCER AUTOMOBILE CO., Box 126, Trenton, N. J.

JONES SPEEDOMETER

"Geared-to-the-Truth"



Jones Speedometer Dept.

UNITED MANUFACTURERS
250 West 54th Street
NEW YORK

"Gramm"

THE STRONG POINTS—

- Three Point Suspension.
- Gramm Multiple Disk Clutch.
- Gramm Roller Spring Suspension.


The Gramm Motor Car Co.

101 So. Lima St. LIMA, OHIO

New York Headquarters—CROSS-MAGILL MOTOR TRUCK CO.,
30 Church St., New York

Becker Tubing vs. Tool Steel in Solid Bars

BECKER



QUALITY


Genuine Tool Steel Tubing made from electric melted High Carbon Tool Steel containing chromium.

Can be used to advantage for any purpose where solid bar tool steel, with the center bored or drilled out, is now being used.

Saves weight and cost of machining.

BECKER STEEL COMPANY OF AMERICA
90 West Street, New York, N. Y.

BECKER



UNIFORMITY



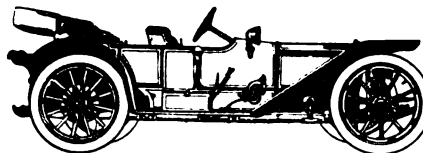
1911 CATALOGUE READY

CORBIN MOTOR VEHICLE CORPORATION
New Britain, Conn., U. S. A.
Licensed under Selden patent.

THE AMERICAN

"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading cities. Increased output this year offers a new opportunity to buyer and dealer alike.



SEMI-TORPEDO TRAVELER

Underlump frame; 40 in. wheels; 4 cyl.; 50 H. P., \$4250.

AMERICAN MOTOR CAR CO., Dept. V, Indianapolis, Ind.
Licensed under Selden patent.



"The car with the invisible start."

96 in. wheel base 22½ H. P. \$800
32 in. wheels

Sliding gear transmission. Multiple disc clutch. Weight, 1200 lbs.

Runabout \$800.
Roadster \$825.
Surrey \$850.



Write for Catalog
K-R-I-T Motor Car Company
DETROIT

\$1,600 Cartercar

Model "L," 4 cylinder, 30-35 H.P., 110 inch wheel base, 5 passenger, Friction Transmission, Chain-in-Oil Drive, any number of speeds, will climb a 50% grade with load, including magneto, gas lamps, generator, horn, mats, tools, jack, etc. \$1,600.



Model "H," 4 cylinder, 25 H.P., 100 inch wheel base. Runabout \$1,100. Double Rumble \$1,125. Double Divided Rear Seat \$1,150. Miniature Tonneau \$1,150.

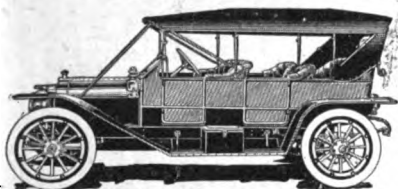
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CARTERCAR CO.

Pontiac, Mich.
Licensed Under Selden Patent.

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THE SELDEN CAR FOR 1911



The Selden Car stands for every desirable development in the automobile—from the powerful perfectly constructed engine to the evenly balanced quality parts that go to make the finished car.

A wide range of body styles and prices. Roadster, touring and torpedo bodies. New four and six passenger torpedo bodies with fore-doors.

With complete touring equipment, from \$2250 to \$2600

Good territory still open for live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.
GEO. S. SELDEN, Pres. Licensed under Selden patent

THE MARMON

"The Easiest Riding Car in The World"



Closed Front
Touring Car, \$2,750

Holds more long-distance racing records than any car in America.

NORDYKE & MARMON CO., Indianapolis, Ind.
(Estab. 1851) Licensed under Selden patent.



GUARANTEED FOR LIFE

The most economical car in the world

Runabout	\$750	Touring Car	\$900
Torpedo Runabout	\$850	Coupe	\$1100

HUPP MOTOR CAR COMPANY

Dept. K DETROIT, MICH.
Licensed under Selden patent.

The name and reputation of the HAYNES is your best possible safeguard in the purchase of a high-grade car.

HAYNES AUTOMOBILE COMPANY
Station C KOKOMO, INDIANA
Licensed under Selden patent.

Moline

"King of the Road"

THE latest addition to the "Dreadnought" Moline 1911 Models. Beautifully finished in a rich dark grey, heavy nickel and black enameled trimmings. Price includes zig-zag windshield, five lamps and full kit of tools. Equipped with our famous



35 H. P.
112-in. Wheel Base
36-in. Wheels

Fore Door, \$1700

4x6 Long Stroke Motor

with which we won Chicago Trophy in 1910 Glidden Tour and Team Trophy in 1000 mile Chicago run. Write for booklets on both runs and 1911 Catalog

TOURING TYPE, \$1650

TOY TONNEAU, \$1600

Some good territory for live dealers.

MOLINE AUTOMOBILE CO., 61 Keokuk St., E. Moline, Ill.

You can buy

Rebuilt Thomas Flyers
and other makes practically as good as new which are cheaper and better than some new cars. Prices range from \$750 up. Second-hand small cars taken in exchange.

E. R. THOMAS MOTOR CO., BUFFALO NEW YORK

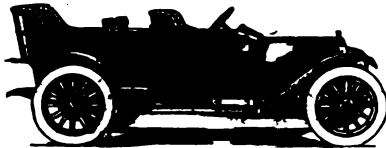
New York Branch: Broadway and 63d Street

Boston Branch: 587 Boylston Street

Chicago Branch: 2255 Michigan Avenue

Speedwell

YOUR sense of the proportion of value to price will tell you, immediately you see the Speedwell cars, that here is a value more generous than you have found in many another car of higher price. The 1911 literature is ready.



THE SPEEDWELL MOTOR CAR CO.

50 Essex Ave., Dayton, Ohio

MODEL 11-F SPECIAL

7-Passenger Touring Car, \$2,900

5-Passenger Touring Car, \$2,750

COLE 30-1911

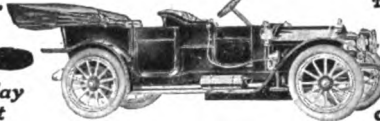
The Classiest Car of Them All

The sturdiest, most rugged, most practical car you can wish for, with the same graceful, fetching lines, rich upholstery and perfect mechanism for which you must pay a thousand dollars more in other cars.

C. P. Henderson, Sales Department,
Cole Motor Car Company, Indianapolis, Ind.

"Fore-Door"
Touring Car,
30-36 H. P.
\$1,650

Cole Flyer
Torpedo Roadster,
30 H. P.
\$1,500



Write Today
for Booklet

and Name
of Local Dealer

The Paige-Detroit 1911

4 Cycle—4 Cylinder **\$800**
Full 25 H. P. Motor

Complete specifications and catalogue upon request

THE PAIGE-DETROIT MOTOR CAR CO.

245-255 Twenty-First Street

Detroit, Mich.

30,000 MILES WITHOUT ADJUSTMENT.
THESE PARSONS WHITE BRASS BEARINGS RAN
THAT DISTANCE IN A PACKARD CAR. THEY ARE BACK IN
THE CAR WITHOUT EVEN BEING SCRAPPED
STILL RUNNING RUNNING STILL.



THE W. CRAMP & SONS SHIP & ENGINE BUILDING CO.
PHILADELPHIA, PENNA.

Cramp — Metals

HENRY "40"

Perfect Road Score in 1000 Mile Reliability Contest

"BUILT
TO SELL
ON ITS
MERITS"

\$1750

CATALOGUE
SHOWS BIG
LINE DIFFER-
ENT MODELS

YOU WILL LIKE OUR MODEL "K" AT \$900

Henry Motor Car Sales Co., 1507 Michigan Boulevard
Chicago, Illinois

Driver Geo. Clark Added More

victories in the Dallas, Texas, meet to the long string which he annexed last summer in a Cutting 40 equipped with a

Remy Magneto

"Best in the World"

REMY ELECTRIC COMPANY
Anderson, Ind.

SERVICE and SATISFACTION

are assured when

G & J TIRES

are used.

G & J TIRE CO., Indianapolis, Ind.
We Sell Continental Demountable Rims.

A Sense of Security

is worth something. When you buy our castings you can rest secure in the knowledge that you can absolutely depend on them.

The Manufacturers Foundry Co.
WATERBURY, CONN.



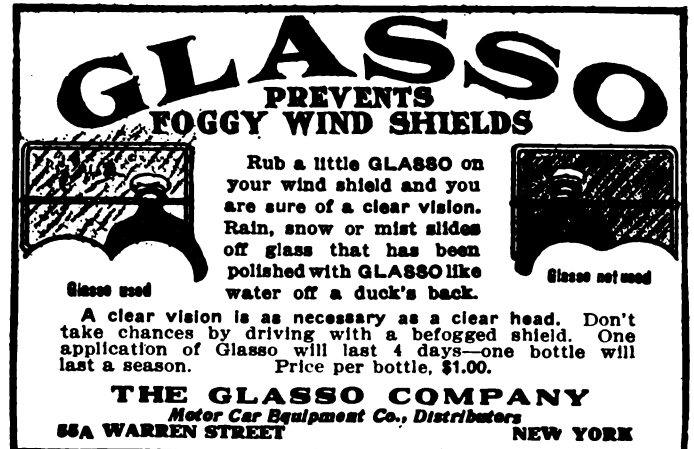
**DO YOU WANT
DIE CASTINGS FREE**

from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?

Van Wagner makes that kind.

Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. **WRITE US.**

**E. B. Van Wagner Mfg. Co., 706 Union Bldg
SYRACUSE, N. Y.**



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**PREVENTS
FOGGY WIND SHIELDS**

Rub a little GLASSO on your wind shield and you are sure of a clear vision. Rain, snow or mist slides off glass that has been polished with GLASSO like water off a duck's back.

Glasso used
A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasso will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

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A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasso will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

THE GLASSO COMPANY
Motor Car Equipment Co., Distributors
55A WARREN STREET NEW YORK

Pressed Steel Step Hangers



With ears
for attaching
mud apron.

These cuts show only two of the various styles of heads we can furnish. Our dies are so constructed that we can make these hangers with almost any drop or extension desired. Made from 5-32 inch steel—lighter and stronger than forgings.

*Samples or blue prints cheerfully
furnished on request.*

**PRICES RIGHT
PROMPT DELIVERY**

The Bossert Co.
UTICA, N. Y.



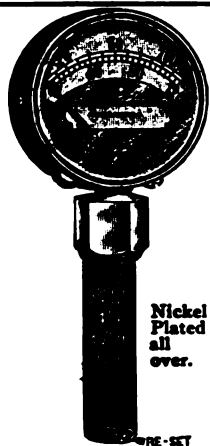
Plain
pattern.



DIAMOND CHAINS

are and have been the recognized quality standard for 20 years. Strong, accurate and durable. Let us cut your sprockets.

DIAMOND CHAIN & MFG. CO.
150 W. Georgia St. Indianapolis, Ind.
Capacity 8,000,000 feet per year.



Nickel
Plated
all
over.

A Perfect Tire Gauge at Last!

If you are not using a Tire Gauge get one of these at once; and if you are using one which you cannot depend on, send for an Edelmenn Tire Gauge, guaranteed absolutely accurate.

This Gauge is self indicating, and the pointer hand remains at the maximum pressure until it is re-set. To operate, simply press against Tire Valve, then read the pressure at your convenience.

PRICE \$1.50 at all dealers, or by registered mail on receipt of price.

E. EDELMANN & CO.
47-49 W. Kinzie St. Chicago

ARNOLD ALARM

**The Perfect Electric Signal for
Automobiles and Motor Boats**

Send for Special Offer. The best retailers proposition ever presented. Send now.

STANDARD ELECTRIC WORKS, Dept. H, Racine, Wis.

MONEY SAVERS AND MONEY GETTERS

Atterbury Commercial Wagons and Trucks

FULL INFORMATION UPON APPLICATION

WE make vehicles for any kind of business, guarantee efficient service and as one of the oldest makers of commercial power-wagons our product is a known and fixed quantity. We can interest any merchant interested in effecting a business economy.

ATTERBURY MOTOR CAR COMPANY, Buffalo, N. Y.

LEST YOU FORGET

Write today for copy
1911 Catalog. Missing
means losing.

Ford Motor Company DETROIT, MICH.

MAXWELL CARS

1911 Line

Model E. A. Touring Car, 4-cylinder,	30 h. p.,	price, \$1350
Model G. A. " " 4 " "	30 " "	1350
Model G. A. Roadster, 4 " "	30 " "	1350
Model I Touring Car, 4 " "	25 " "	950
Model Q-11 Runabout 4 " "	22 " "	750
Model Q-3-11 Touring Car, 4 " "	22 " "	800
Model A. B. Runabout, 2 " "	16 " "	600

Maxwell-Briscoe Motor Co.

Licensed under Selden patent.

VALE STREET

TARRYTOWN, N. Y.

THE 1911 OWEN

The 1911 OWEN BERLIN represents the highest development of closed car construction. It is the embodiment of comfort with exclusive features affording greater convenience than can be enjoyed in other cars. The easy running qualities of the OWEN BERLIN are unequaled because of large wheels, OWEN spring suspension and minimum vibration from the long stroke motor. Combining these features with interior appointments of the most luxurious character, the OWEN BERLIN (seating six) is a car certain to please the most exacting.

Catalog and detailed descriptive matter sent upon request.

OWEN MOTOR CAR COMPANY

1620 East Grand Boulevard

DETROIT, MICH.

The H. F. M. Oil Filtering

AND

LUBRICATING SYSTEM

Is the first radical and distinct improvement in automobile lubrication since the industry began.

AUTOMATIC OIL FILTER

SELF-CLEANING CRANK-OASE

Provide Clean, Cool Oil All the Time.

Write for convincing proofs.

THE AL-TON MOTOR ACCESSORY CO.

E. South Street

Akron, Ohio

6 Cylinder Cars
50 and 60 H. P.
\$2650 to \$3250

KLINE CAR

4 Cylinder Cars
24 to 40 H. P.
\$1500 to \$2250

B C K MOTOR CAR COMPANY, York, Pa.

ENDORSED!

Hudson Maxim
says:

"I have tried many kinds of horns and made a serious study of this question, and I have found that to clear the way there is nothing like the KLAXON with its harsh, untuneful warning."

Max Pemberton
says:

"Of all the horns and syrens on the market, I, myself, would give first place to this famous KLAXON."

Harper's Weekly
says:

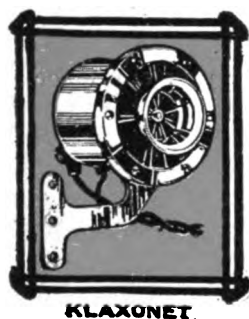
"The sound of the Signal-horn must be *short, harsh, sharp*. Its tune must *not* be musical, because musical tones lull and soothe."

Motor Print
says:

"As automobiles and those who use them are practical, whatever else they may or may not be, the warning *which is the most efficient as a warning* is used regardless of all ethical and esthetic objections thereto."

40,000 Motorists
say:

That the KLAXON has made automobiling safe,—that they would rather stop automobiling than be without it,—that it should be made by law the *Standard Warning Signal*.



KLAXONET

LOVELL-McCONNELL MFG. CO., Newark, N. J.

KLAXON

"The Public Safety Signal"



KLAXON



THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

Licensed under Selden patent.

THE MOTOR WORLD

A trade paper giving the
World's Motor News

Ten cents a copy—
Two dollars a year



The makers of most of the high-grade American cars pay for Solar Lamp equipment considerably more money than ordinary lamps would cost them.

They don't do this out of goodness of heart. They do it for the hard-business, common-sense reason that

**S
O
L
A
R**



**Solar
Lamps**



**L
A
M
P
S**

and Solars alone, represent lamp perfection in the minds of the great majority of motorists.

No matter what make your car may be, the maker will furnish Solars if you insist on them.

Our free catalog tells all about them, including a great variety of special-purpose lamps for special needs.

Badger Brass Mfg. Co.

Kenosha, Wis.

New York City

HARTFORD

Wire Grip Non-Skid Tires (Midgley Tread)

The Tire That Has
Solved The Problem Tire
Makers Have Been Working
On For Years.

The Hartford Wire Grip Non-Skid Tire is the *only* true non-skid that is resilient;

The *only* true non-skid that does not rack and ruin the car;

The *only* true non-skid that does not mar the easy riding qualities of the car;

The only non-skid that you carry right with you in the tread of the tire itself;

In other words, it is a *pneumatic* tire, and a non-skid tire combined; Insure your car, its passengers and the public by putting them on your car *now*.

This tire is made in standard sizes, Dunlop, Hartford, Quick Detachable Clincher and Clincher; also in millimeter sizes.

WE SELL CONTINENTAL DEMOUNTABLE RIMS

The Hartford Rubber Works Co.
HARTFORD, CONN.

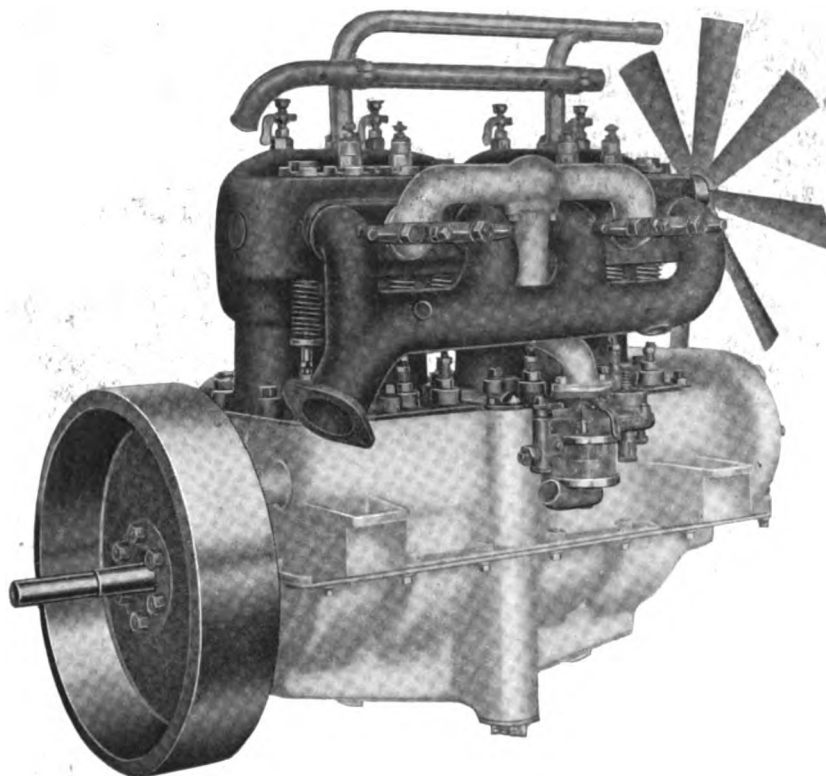
BRANCHES—New York, 57th St. and Broadway; Chicago, 12th St. and Michigan Ave.; Boston, 863 Boylston St.; Philadelphia, 1334 Arch St.; Detroit, 256 Jefferson Ave.; Buffalo, 725 Main St.; Cleveland, 1831 Euclid Ave.; Denver, 1564 Broadway; Atlanta, Ga., 19 Houston St.; Minneapolis, 622 Third Ave., So.; Kansas City, Mo., 719 E. 15th St.; Dallas, Texas, 2029 Commerce St.; St. Louis, Mo., 19th and Locust Sts.

AGENCIES—Chanslor & Lyon Motor Supply Co., San Francisco, Cal.; Los Angeles, Cal.; Fresno, Cal.; Spokane, Wash., Seattle, Wash.; F. P. Keenan Co., Portland, Ore.; Jos. Woodwell Co., Pittsburg, Pa.; Mercantile Lumber & Supply Co., Kansas City, Mo.



A GOOD MOTOR

Manufacturers of Automobiles who are desirous of putting into their cars a Motor of real merit, will do well to carefully investigate this motor. No attempt has been made to make a motor "at a price." Efficiency, economy in fuel, and ability to stand up to the work under all conditions has been the object aimed at.



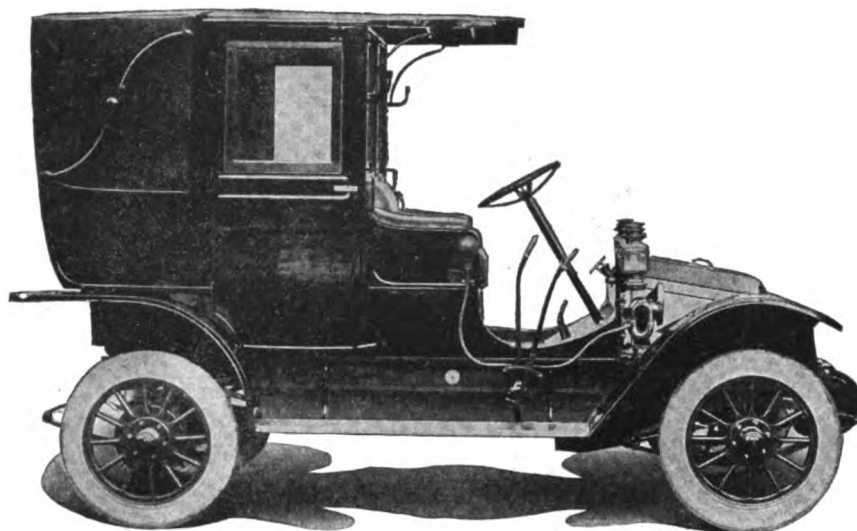
The Parker Motor

THE PARKER MOTOR is a 4 cylinder, 4 cycle, water cooled motor $4\frac{1}{2} \times 5$ bore and stroke; cylinders cast in pairs offset 1 in.; the motor is exceedingly well water jacketed, valve head being particularly well water jacketed. The cylinders are of the L type; valves being all located on the right side and the valves are $2\frac{1}{4}$ in. with a lift of 5-16 in. for both exhaust and intake valves; pistons are $5\frac{1}{2}$ in. long with four eccentric piston rings to each piston. The connecting rods are drop forged, heat treated and 12 in. long, being nearly two and one-half times the stroke and making a very quiet running motor. The crank case is in two sections of aluminum; the water is circulated by a gear driven pump on the left hand side of motor; the crank shaft is of .40 carbon steel, heat treated and having three long bearings; the shaft diameter is $1\frac{3}{4}$ in.; the front bearing $3\frac{1}{4}$ in.; the middle $3\frac{3}{8}$ in., and rear bearing $4\frac{1}{2}$ in. long. The cam shaft is of .30 carbon O. H. steel with cams and timer gear flange forged integral; it is carbonized, hardened and ground to size, and, like the crank shaft, it has three long bearings, the surfaces of which are ground to size and run in special babbitt bearings.

The man who measures the value of a motor by what it will do is the man we are trying to interest. Test out a Parker Motor—it will talk for itself better than we can talk for it. If you have had motor troubles try the Parker Motor. It will solve your problem, and your reputation will not suffer.

THE PARKER MOTOR CO., Hartford, Conn.

Franklin Taxicabs



The use of Franklin cabs insures a fifty per cent increase in profit as compared with that obtained from the use of other types of motor cab.

The rapid depreciation to which the ordinary taxicab is subjected through the strain of continuous city driving is overcome in the Franklin by light weight, a wood chassis frame, full-elliptic springs and ample tire equipment.

Operating charges, cost for tires, fuel, oil and repairs, rapidly eat up the profits of the average taxicab service. All of these items are at least fifty per cent lower with the Franklin than with any other type of taxicab.

The Franklin cab is easy on tires because it is resilient, easy-riding and light-weight. The tires are not overloaded; they are not pounded to pieces.

Cost for fuel and oil is greatly reduced through the high efficiency of the Franklin air-cooled motor. Because the Franklin cab is light-weight, excessive power is not required to get the necessary speed ability.

Franklin air cooling does away with all trouble with the cooling system. The motor cools perfectly even under hard, continuous driving. The cooling system requires no attention because, having no moving parts, there is nothing to get out of order.

Wherever Franklin taxicabs are in use they last longer, cost less to maintain, give more continuous service and show much larger profits than any other.

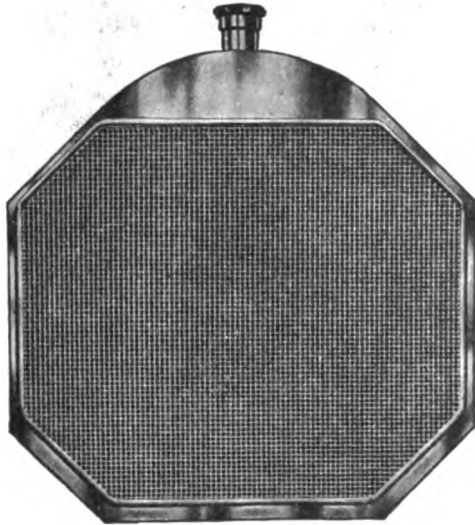
The price of the Franklin taxicab is \$2850. It more than pays for itself in what it earns and in what it saves in cost of up-keep and operation over other cabs.

H H FRANKLIN MANUFACTURING COMPANY Syracuse N Y

Member A. L. A. M.

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

SOLE DISTRIBUTOR



The Mayo—the radiator thoroughbred

¶ Mayo Radiators are made in accordance with the highest standards and are sold on the basis of their superiority of construction and efficiency in performance.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

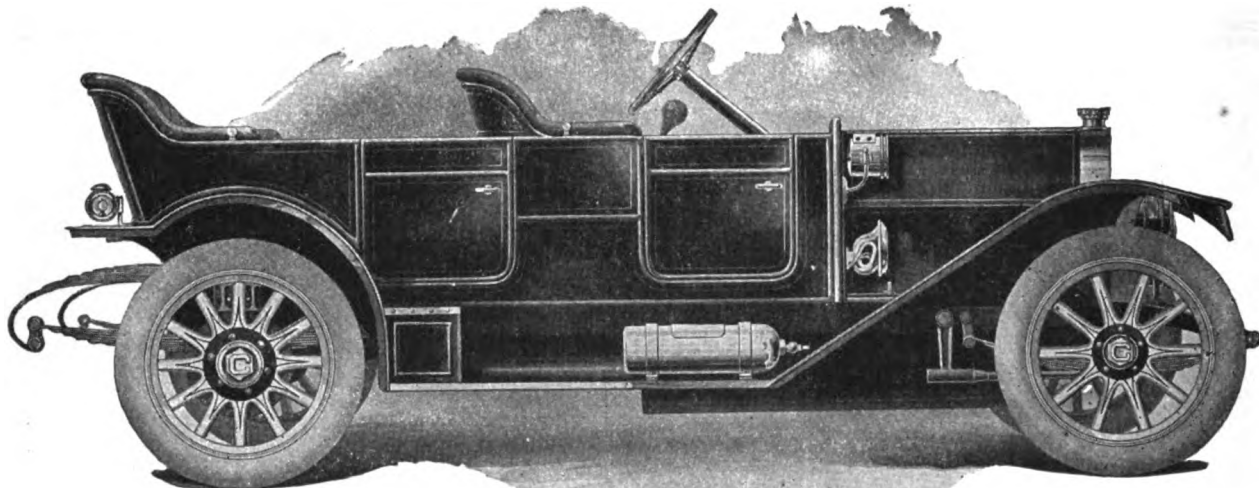
FRONT **AXLES** REAR
OF QUALITY

Let us help in solving that
MANUFACTURING PROBLEM

- ¶ By furnishing your axle equipments in carload lots as you need them and when you need them.
- ¶ Our standard equipments include all the improved types in use.
- ¶ I beam or tubular fronts, chain or bevel drive rears, cup and cone-annular or roller type bearing.
- ¶ We are specialists in this line and our experience is at your disposal.

THE AMERICAN BALL BEARING CO.

L. S. & M. S. Ry. and Edgewater Park
CLEVELAND, OHIO



Model H 5 Passenger Fore Door Touring Car—\$1750

COLBY

Built to Compete with \$3000 Cars

We wish to extend our thanks to the experts and others who have been so pronounced in proclaiming the Colby "40" the best motor car ever put on the market selling for less than \$2500.

It easily develops 5 to 50 miles an hour without overworking the motor, or causing any unpleasant vibration of the car.

The Colby is designed for comfort, as well as appearance, having the grace and beauty only found in high priced cars.

In our construction, we have used only the very best workmanship and material throughout. A glance at our specifications will prove it. Compare them with cars selling for three thousand and more.

We would be pleased to have the most skeptical call at our exhibit and be convinced.

SPECIFICATIONS

Body: Standard touring straight line.
Seating capacity, five. Fore-doors.
Motor: Four Cylinder—H. P. 35-40.
Bore, $4\frac{1}{4}$; stroke, $5\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.
Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.
Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system.
Carburation: Carburetor—special fuel feed—gravity.
Clutch: Type—multiple disc. Friction surfaces—steel to steel.
Gearset: Selective—located amidship. Three speeds forward.
Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.
Bearings: Crankshaft—three large. Plain. Camshaft—three, plain. Clutch

—spindle, plain. Clutch, thrust, ball.
Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball.
Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white bronze.
Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36 x 4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type.

Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.

Demountable Rims:

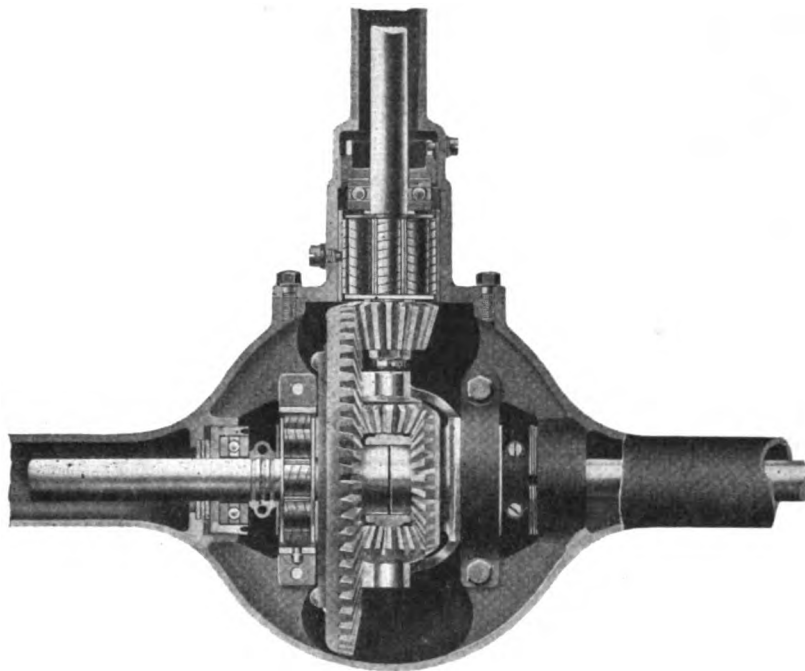
Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.

Control: Hand levers on steering wheel and foot accelerator.
Price: \$1,750, f. o. b. Mason City.

COLBY MOTOR CAR COMPANY, Mason City, Iowa

New York Representative—EMPIRE CITY AUTOMOBILE CO., 1800 Broadway.

Hyatt Roller Bearings



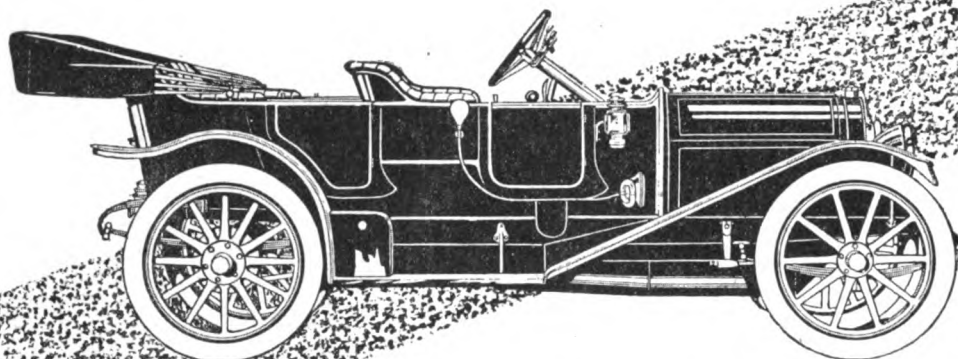
THE Reliability of the Hyatt Roller Bearing has been continuously demonstrated from the advent of the first automobile. This is evidenced by its general adoption by the majority of the leading car builders, followed by its continued use year after year. Its success is due to a distinctive principle directly applied and properly executed by an effective manufacturing organization.

Hyatt Roller Bearings are correct in design—they are made of thoroughly tested materials—are carefully inspected—wear longer—and have greater practical value than any bearing made.

Hyatt Roller Bearing Co.

Detroit, Michigan

Fore-Door
Demi-Tonneau



You Can Show Features Your Customer Cannot Equal Elsewhere

NOT just a few but many—everywhere about this blue-blood motor car, the one perfectly standardized \$1500 motor car, the motor car of this price that is replete with the features of cars costing up to \$4000, the motor car that tests way above its rating, that will do more than you guarantee.

This \$1500 is a small amount of money for a fully-equipped Abbott-Detroit, but a large amount of money for anyone to spend on one out-and-out purchase. Your customer must be shown and in the Abbott-Detroit you show him the greatest value in a motor car of this price in the world.

Abbott-Detroit

Because our car is sold fully equipped, excepting top and windshield, at \$1500, places it very much ahead of the advertised \$1500 cars whose "extras" bring the price several hundred dollars higher. The agent closes a sale much easier than he does when he has to explain about "extras."

The dealer who gets the Abbott-Detroit Agency for his territory has an advantage over all others. You want this advantage if you can get it, and your next best move is to write us at once for the Book of the Abbott-Detroit and our Special Agency Proposition.

Model B. Five-Passenger Touring Car, Standard Equipment, \$1500 F. O. B. Detroit.

Fore-Door Five-Passenger Touring Car, Standard Equipment, \$1550 F. O. B. Detroit.

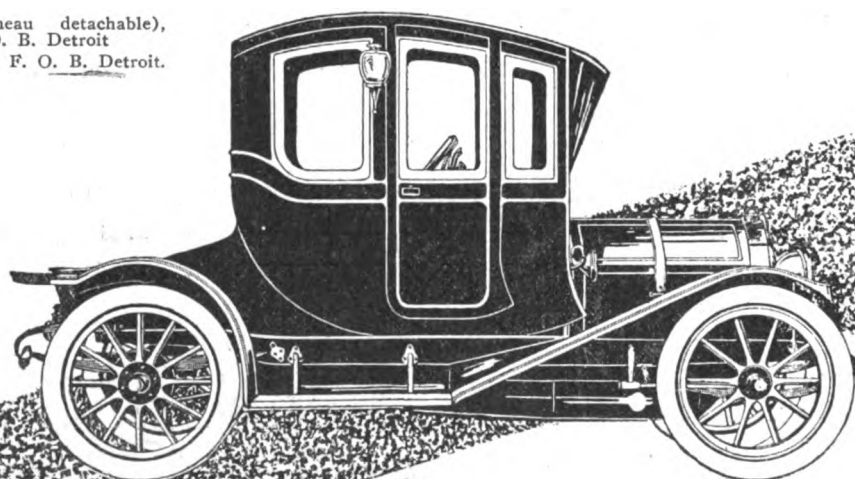
Roadster, Standard Equipment, \$1500 F. O. B. Detroit.

Fore-Door Demi-Tonneau (tonneau detachable), Standard Equipment, \$1650 F. O. B. Detroit.

Coupe, Standard Equipment, \$2350 F. O. B. Detroit.

ABBOTT MOTOR COMPANY

143 Waterloo Street, Detroit, Michigan



Coupe



ONLY FOUR TRUCK BUILDERS

Do Not Use TIMKEN Roller Bearings

on the commercial cars exhibited at the Madison Square Garden Show!

Commercial Cars	Number of Cars Shown	Front Wheel Bearings	Rear Wheel Bearings
Stearns	1	TIMKEN	TIMKEN
Morgan	1	TIMKEN	TIMKEN
Pierce	1	TIMKEN	TIMKEN
Waverley	2	2 TIMKEN	2 TIMKEN
Knox	3	3 TIMKEN	3 TIMKEN
Peerless	2	2 TIMKEN	2 TIMKEN
Hewitt	3	3 TIMKEN	3 TIMKEN
Autocar	10	10 TIMKEN	10 TIMKEN
Reliance	3	3 TIMKEN	3 TIMKEN
Rapid	4	4 TIMKEN	4 TIMKEN
Sampson	1	1 Ball	1 TIMKEN
Grabowsky	7	7 TIMKEN	7 TIMKEN
Lansden	5	5 TIMKEN	5 TIMKEN
Studebaker	5	5 Plain	5 Plain
White	3	3 Plain	3 Plain
Packard	7	7 Ball	7 Ball
Mack	3	3 TIMKEN	3 Ball
Alco	6	6 TIMKEN	6 TIMKEN
General Vehicle	6	6 TIMKEN	6 TIMKEN
Detroit Electric	1	1 TIMKEN	1 TIMKEN
Pope	1	1 Plain	1 Plain
Franklin	6	6 TIMKEN	6 TIMKEN
Reo	2	2 TIMKEN	2 TIMKEN
Overland	2	2 TIMKEN	2 TIMKEN
Brush	3	3 TIMKEN	3 Ball
Atlas	3	3 Ball	3 Ball
Randolph	3	3 TIMKEN	3 TIMKEN
McIntyre	2	2 TIMKEN	2 TIMKEN
Garford	2	2 TIMKEN	2 TIMKEN
Ward	3	3 TIMKEN	3 TIMKEN
Kissel	1	1 Plain	1 Plain
Locomobile	1	1 TIMKEN	1 TIMKEN
	2	2 TIMKEN	2 TIMKEN
	2	2 TIMKEN	2 Ball

THE TIMKEN ROLLER BEARING CO., Canton, Ohio, U. S. A.

No Nuts

No Bolts

No Clamps

No Junk

No Bunk

Adopted as standard equipment on **all Benz** cars.

Owners of **Peerless, Packard, Pierce-Arrow, Lozier, Chalmers, Cadillac, Benz, Pope-Hartford, Winton** and many other makes of cars are ordering us to equip their individual cars with our **Demountable Rims**, and in a great many instances are specifying them when ordering new cars.

We manufacture our own device and **guaran-**



tee it for life not to be affected by any weather conditions.

Nothing to lose in the sand, dirt or snow. Just mechanically comes off and is mechanically forced on again.

Designed originally as a demountable rim to do away with tire trouble, and for use especially on pleasure cars, it has since developed to the safest, simplest and quickest demountable ever produced.

I consider the Booth perfect, and use them exclusively on all my cars. —BARNEY OLDFIELD.

It's a Booth! That's all you need know about a demountable rim. All engineers or any convention of engineers invited to prove that our rim is not mechanically perfect.



The Booth Demountable Rim Co.

CLEVELAND, OHIO

QUALITY AUTOMOBILES

WILL EQUIP WITH THE

Warner AUTO-METER for 1911

Makers who feel a personal responsibility for the reliability and dependability of the accessories used on their cars are either equipping with the Warner Auto-Meter for 1911 or are recommending it as an **EXTRA** because of its supreme excellence.

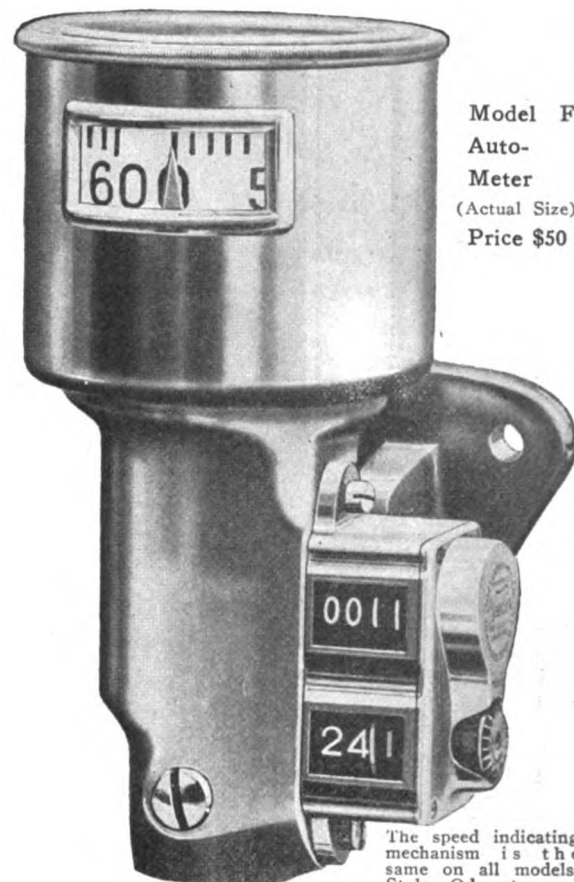
Many makers have gone so far as to attach Auto-Meter driving gears at their factories so as to be able to attach an Auto-Meter in a few minutes when a customer specifies it.

Every automobile manufacturer of note in the United States acknowledges the superiority of the Warner Auto-Meter by using bought-and-paid-for Warners on his personal cars, on his racing machines, and on every car where an accurate record is wanted, and where "within a few miles per hour of right" is not close enough.

Some of these makers offer other instruments for sale through their branches, because—as they say themselves—they fear the buyer of a popular-priced car will not appreciate or cannot afford the Auto-Meter, as it costs from three to five times as much as other "speed indicators."

Yet, even so, the Auto-Meter is by far the cheapest if you figure the price by miles of travel or years of service. The first Auto-Meters made, over eight years old—are as sturdy, reliable and accurate as when new.

If the maker of your favorite car does not equip with the Auto-Meter, it will be wise judgment on your part to pay for it—or **pay the difference**, if you can afford Quality and care for the trouble-proof satisfaction which goes with it.



Model F
Auto-
Meter
(Actual Size)
Price \$50

The speed indicating mechanism is the same on all models. Style, Odometer and finish only are different.



Model K

This represents the open-face type of Auto-Meter with Warner large-figure Odometer. Season, 100,000 miles and repeat; trip, 1,000 miles and repeat. It is the most popular model and by far the best seller. Price, **\$75**

Same as above, but with Chelsea Auto Clock (MODEL M). Price **\$125**

Model O—"The Twins"



This is the same instrument as Models K and M, with large Chelsea Auto Clock.

Has the Warner large-figure Odometer. The ultimate in high-class instrument making. Price, **\$145**

Any of the above designs can be secured with 100-mile speed dial at a slight advance in price.

Warner Instrument Company

1092 Wheeler Ave., BELOIT, WIS.

BRANCHES

ATLANTA, 116 Edgewood Ave.	KANSAS CITY, 1613 Grand Ave.
BOSTON, 925 Boylston St.	LOS ANGELES, 748 S. Olive St.
BUFFALO, 720 Main St.	NEW YORK, 1902 Broadway
CHICAGO, 2420 Michigan Ave.	PHILADELPHIA, 302 N. Broad St.
CINCINNATI, 807 Main St.	PITTSBURG, 5940 Kirkwood St.
CLEVELAND, 2062 Euclid Ave.	PORTLAND, ORE., 14 N. Seventh St.
DENVER, 1518 Broadway	SAN FRANCISCO, 36-38 Van Ness Ave.
DETROIT, 870 Woodward Ave.	SEATTLE, 611 E. Pike St.
INDIANAPOLIS, 330½ N. Illinois St.	ST. LOUIS, 3923 Olive St.

(92)

The Same Apples in the Middle of the Barrel That Appear on Top—
Keeping Faith with the Public, in Short—That's What It Means—

There Would NEVER, COULD Never Have
Been Otherwise

This Twelfth
Year of

Diamond TIRES

Acknowledged
Supremacy

But it means MORE than this! CONSIDER! ANALYSE! The ONE fact that Diamond Tires were the FIRST MOTOR TIRES MADE IN AMERICA would not have kept them in the FOREMOST RANK BEYOND ONE SINGLE SEASON.

If "Diamond" on a Tire or in our statements does not mean to you "GOOD APPLES ALL THROUGH THE BARREL"—and that TRIFLING WITH YOUR CREDULITY has never been a part of the DIAMOND POLICY, why, then—LOOK UP THE RECORD! Every Automobile tire buyer owes that much to HIMSELF.

TWELVE YEARS OF MANUFACTURING to a greatest mileage standard have meant the establishment of the most complete laboratory in the world devoted to the chemistry of rubber.

And these years have DEVELOPED AN AUTOMOBILE TIRE AND A FACTORY which in production and sales EXCEED THOSE OF ANY OTHER IN THE WORLD.

Diamond Tires are made in all types and for all cars. Their unrivaled service capacity will reveal itself as conspicuously on light machines as on the heavy, high powered and very fast.

KEEPING FAITH WITH THE PUBLIC has also meant giving the benefit of reduced prices when crude rubber markets permitted. Notices advising a 10 per cent. reduction on Diamond casings and 15 per cent. on tubes Jan. 9, had been in the mail 48 HOURS when another company discovered this action and wired broadcast a similar notice ALSO CLAIMING THEREIN to be taking the INITIATIVE IN GIVING THE LOWERED PRICE.

BUT THIS MAY BE IMMATERIAL—IT IS SIMPLY AN EXAMPLE OF METHODS—and what we want to HAMMER HOME are the things THAT COUNT—To persuade you to consider what DETERMINES the service you are going to get FOR YOUR MONEY. IT IS THE QUALITY AND QUANTITY OF MATERIALS USED, THE QUALITY OF WORKMANSHIP AND THE KNOWLEDGE AND CHARACTER OF THE MEN BEHIND THE GUNS.

WE HAVE ALREADY TOLD YOU of the respective merits of the clincher type and the straight side or hookless type of tires. WE MAKE BOTH TYPES. Neither of them rim-cuts. This "rim-cutting" talk is putting up a BOGY MAN TO FRIGHTEN YOU, NOWADAYS, ANYWAY. It is a thing of the DISTANT PAST, excepting only when tires are used on seriously imperfect rims, when ANY tire will be cut.

(In case you have not seen the advertisement referred to, let us mail newspaper proof.)

Ask your own INTELLIGENCE whether scientific development with GREATEST MILEAGE, always the thing to be achieved, means more than NOVELTIES in shapes and treads and "sizes," or any so-called talking points that, no matter how much advertised, have no merit of real efficiency which will bear the analysis of even the EXPERIENCED LAYMAN.

The Diamond straight-side tire IS THE BEST OF ITS KIND, AND ALL DIAMOND TIRES ARE SCIENTIFICALLY CORRECT IN SIZE.

DIAMOND TIRE PROPORTIONS as well as Diamond tire construction, have been determined by engineers who understand the PROBLEMS INVOLVED and whose experience is more extensive than is possessed in any other tire factory in America. POINTS FOR ADVERTISING purposes are not the basis of any part of Diamond tire construction, nor do they enter into ANY OF THEIR CALCULATIONS.

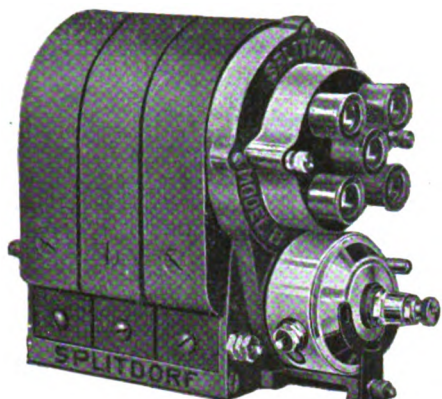
WHAT WE WANT YOU TO KNOW with regard to Diamond tires is that they offer you BETTER rubber, MORE RUBBER, THICKER TREADS—TIRES THAT WILL LAST LONGER, PUNCTURE LESS EASILY, STONEBRUISE RARELY—THINGS THAT COUNT! NOT the immaterial, the advertising novelties, the FALSE AND MISLEADING TALKING POINTS THAT CAN DELIVER YOU NOT A THING IN MILEAGE.

SERVICE—THAT IS WHAT WE ARE SELLING. To assist in supplying it quickly to all, we are opening Service Stations in all sections—49 DIFFERENT CITIES—any of which will give you prompt attention on every inquiry, claim or requirement. Your dealer will be able to get you immediately any size or type of Diamond tire—casing or tube—for pleasure cars or commercial cars.

YOU CAN HAVE GOOD TIRE SERVICE. WE VENTURE TO SAY ALSO THAT WITH THE REDUCED PRICES ON DIAMOND TIRES NOW IN EFFECT, EVEN THE MANUFACTURER OF LOW-PRICED CARS WILL NOT NOW RESIST FURNISHING THEM IF YOU SPECIFY DIAMOND AND STAND FIRM.

Tire literature—especially interesting at this time—on request.

THE DIAMOND RUBBER COMPANY, Akron, Ohio
And All Principal Cities



SPLITDORF

Opens the 1911 Racing Season with

Big Victories at Los Angeles

January 14 and 22

SPLITDORF equipped National won 1 mile time trial; driver, Wilcox; time, .39
 SPLITDORF equipped National won 5 mile free-for-all; driver, Wilcox; time, 3.21
 SPLITDORF equipped National won 5 mile free-for-all; driver, Wilcox; time, 3.42
 SPLITDORF equipped National won 10 mile, 600 cubic inches and under; Merz; time, 7.23
 SPLITDORF equipped National won 25 mile, 600 cubic inches and under; Merz; time, 19.56
 SPLITDORF equipped National won 50 mile, 600 cubic inches and under; Wilcox; time, 40.23

The National Also Won Six Seconds and Four Thirds

These Cars Were Equipped with the Famous

SPLITDORF MAGNETO

Which Furnished Perfect Ignition in Every Race

Please Write for Magneto Catalog

We have just published a very useful and reliable Automobile Guide and Route Book of convenient size, which is invaluable to every tourist. It contains 144 pages, 14 maps and 605 of the most popular routes in the United States. Gives exact mileage between every town. Handsomely bound in leatherette.

Sent postpaid from main office or any of our branches on receipt of 25 cents to cover cost.

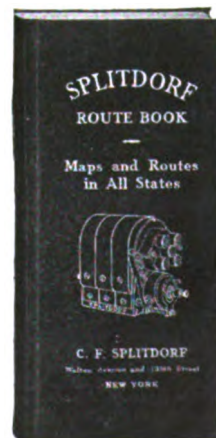
C. F. SPLITDORF

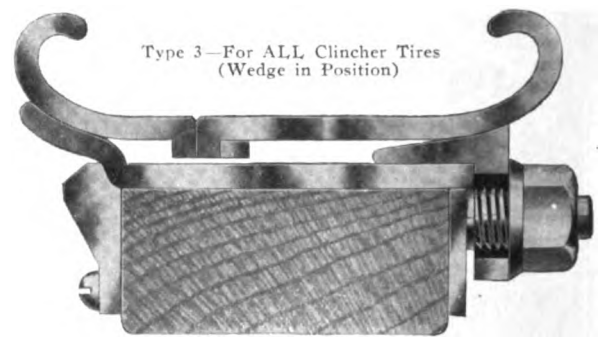
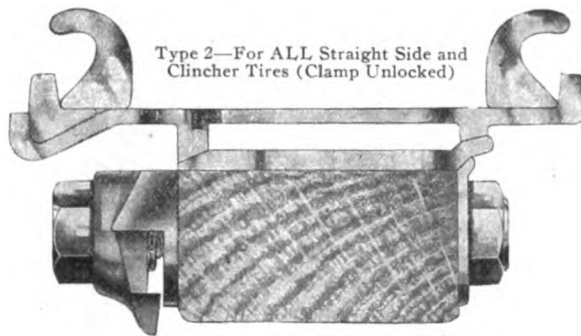
Walton Avenue and 138th Street

Chicago: 319 Michigan Ave.
 San Francisco: 520 Van Ness Ave.
 Detroit: 868 Woodward Ave.
 Boston: Motor Mart.
 Los Angeles: 1226 S. Olive St.

Branch, 1679 Broadway

NEW YORK





STANDARDIZATION OF RIMS

that benefits

CAR BUILDERS—TIRE MAKERS—CAR OWNERS

The Standard Universal Quick Detachable Demountable Rims

"FIT ALL TIRES"

and

Solve the Problem of Interchangeability

25,000 sets of Demountable Rims and 135,000 sets of Quick Detachable Rims, practically 96 per cent. of the total number of Rims made in the United States, have been contracted for by the following manufacturers:

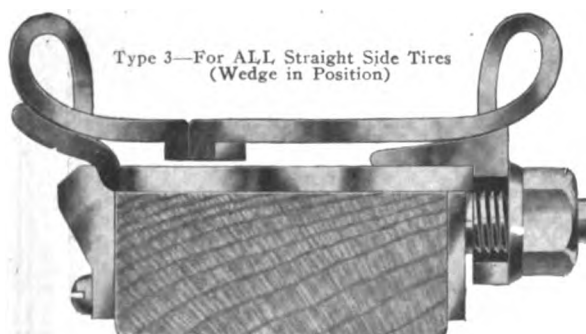
Aeae Motor Car Co., The
American Locomotive Co.
American Motor Car Co.
Anderson Carriage Co.
Argo Electric Vehicle Co.
Ashland Auto Co.
Atlas Motor Car Co.
Atwood Auto Co.
Auburn Auto Co.
Austin Auto Co.
Auto Car Co.
Badger Motor Car Co.
Baker Motor Vehicle Co.
Bartholomew Co., The
Bergdoll, L. J., Motor Co.
Borbein Auto Co.
Broc Electric Carriage Co.
Buick Motor Co.
Burg, The L., Carriage Co.
Cadillac Motor Car Co.

Canada Cycle & Motor Co.
Carhartt Auto Corp.
Chalmers Motor Co.
Columbia Motor Car Co.
Cook Auto & Carriage Co.
Corbin Motor Vehicle Corp.
Cunningham, Jas., Son & Co.
Davis, Geo. W., Carriage Co.
Dayton Motor Car Co.
Dietrich Motor Car Co.
E-M-F Co.
Ellis Motor Car Co.
Elmore Mfg. Co.
Fiat Auto Co.
Franklin, H. H., Mfg. Co.
G & J Tire Co.
Gabriel Auto Co.
Garford Co., The
Gramm Motor Car Co.
Great Southern Auto Co.

Grout Auto Co.
Hartford Rubber Works Co.
Hayes Wheel Co.
Hol Tan Co.
Hudson Motor Car Co.
Imperial Wheel Co.
International Harvester Co.
Inter-State Auto Co.
Jeffery, Thos. B., Co.
Johnson Service Co.
Kissel Motor Car Co.
Lexington Motor Car Co.
Locomobile Co.
Lozier Motor Car Co.
Louverne Auto Co.
McFarlan Motor Car Co.
McLaughlin Motor Car Co.
Mann-Aldrich Carriage Co.
Marion Motor Co.
Maxwell-Briscoe Motor Co.

Michigan Buggy Co.
Middleby Auto Co.
Mitchell-Lewis Motor Co.
Moline Auto Co.
Moon Motor Car Co.
Moyer, H. A.
Morgan & Wright
National Motor Vehicle Co.
Nurdyke & Marmon Co.
Oakland Motor Car Co.
Olds Motor Works
Overholt Co.
Packard Motor Car Co.
Paterson, W. A., & Co.
Peerless Motor Car Co.
Pierce-Arrow Motor Car Co.
Pence Auto Co.
Pope Mfg. Co.
Premier Motor Mfg. Co.
Prudden & Co.

Pullman Motor Car Co.
Rauch & Lang Carriage Co.
Richmond Iron Works Corp.
Schacht Motor Co.
Selden Motor Vehicle Co.
Simplex Auto Co.
Stanley Motor Carriage Co.
Stearns, F. B., Co.
Stevens-Duryea Co.
Streater Motor Car Co.
Studebaker Auto Co.
Thomas, The E. R., Motor Co.
Traveller Auto Co.
Velle Motor Vehicle Co.
Waverley Co., The
Westcott Motor Car Co.
White Co., The
Willys-Overland Co.
Winton Motor Carriage Co.



Write for illustrated
descriptive matter.

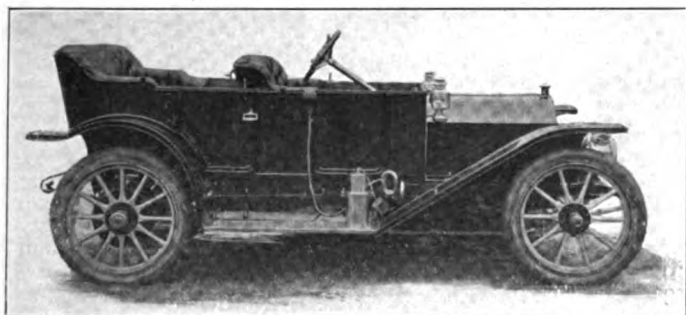
**The
United Rim
Company**
AKRON, OHIO



You Can Pay More

for an automobile, but if you spend twice the amount of money you can obtain no more intrinsic value in materials, quality of workmanship or design; nor a car that will run as well and give more lasting satisfaction than a

Pullman



Model O Vestibuled Touring Car.

"Pullman automobiles are worthy of their name"

The PULLMAN car has solid strength of construction that means freedom from repairs. It has the power, the speed, the size to take you anywhere and at a low consumption of gasoline and oil.

The PULLMAN is an exceptionally powerful and reliable car that is built to fulfill every requirement of touring. Every part bears a perfect relation to every other part, which makes the PULLMAN a perfectly proportioned car—a car in which the correct suspension of every part greatly reduces the wear on tires.

In 1910 the PULLMAN won every endurance and speed contest in which it was entered, several times defeating cars of three times the PULLMAN cost and horsepower.

"Pullman Performances Prove Its Perfection"

Prices \$1650 to \$4000; 30, 35 and 50 Horsepower

Write for catalog and testimonials of owners.

PULLMAN MOTOR CAR CO.

Drawer W

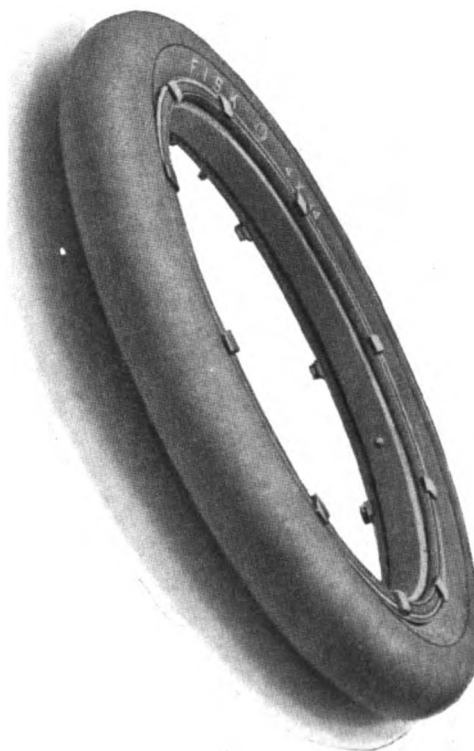
YORK, PA.

FISK

Bolted-On Tire

The one type that cannot blow off the rim. Unique in its absolute safety.

Takes fewer Inner Tubes than any other type of tire made.



**Fisk Tires for Every Rim—
Bolted-On, Clincher, Q. D.
Clincher, Fisk-Dunlop.**

*Send for Our Booklet
on the Bolted-On Type.*

The Fisk Rubber Co.

Dept. 23 Chicopee Falls, Mass.

23 Direct Factory Branches

Marion

"Thirty"

30 Horsepower
110-inch Wheel Base

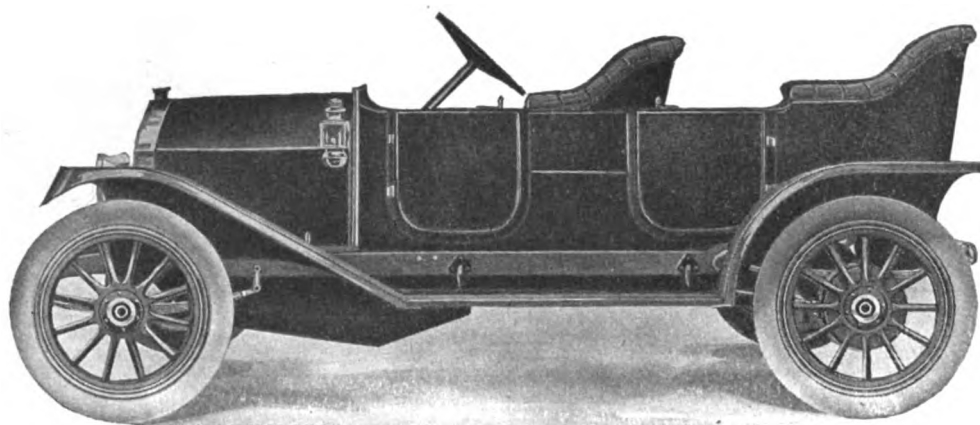
Roadster Style,
\$1,000

Torpedo Roadster,
\$1,050

5-Passenger
Touring, \$1,150

5-Passenger
Fore Doors, \$1,200

Headlights and
Magneto Included



With 30 Horsepower—110-inch Wheel Base—\$1,200.

Marion

"Forty"

40 Horsepower
115-inch Wheel Base
Roadster Style, \$1,600

Torpedo Roadster,
\$1,650

4-Passenger Close-
Coupled, \$1,600

5-Passenger
Touring, \$1,650

4-Passenger Coupe,
With Extra Body,
\$2,000

Limousine, \$2,500
Headlights and Bosch
Magneto Included

See the Thousand-Man Car

You will find no other car in the city so interesting as the Marion for 1911.

For these new Marion models which are now on exhibit show all the best ideas of a thousand designers. You can see all the greatest features which this industry has developed in this one composite car.

It is the product of a thousand brains.

All the Best Ideas

Eight years ago we started out to combine in one car all the best ideas that developed.

We had our own designers, our own engineers. Six of the ablest in America have worked on Marion cars. And they invented some features which no other man has excelled.

But their main duty has been to put other men's ideas to a test. They have watched every improvement, every bettered material, every new device. They have compared one with another—in road tests and contests—until they absolutely knew which was best.

These men have smothered their own pride of invention. When any man anywhere devised anything better they bought or adopted that man's idea.

The one idea has always been to have

every feature in the Marion car the very best of its kind in existence.

For eight years we have worked with that one idea. Each important feature has been compared with others over thousands of miles of road. Each has been tested in many national contests. And thousands of Marion owners have helped us make the comparisons.

It is very interesting to see the final result in the Marions for 1911.

The Men Who Helped

We gladly give public credit to the men who have helped us most.

The motor in our "Forty" is the latest Continental creation. The engine in our "Thirty" is made for us by one of our largest competitors. They ask us not to state the name.

These engines—in more than fifty thousand famous cars—have proved themselves the best engines made. No other engines have done so much to build up great reputations.

We use the Kinsey pressed steel frames, the Warner differential, the Warner steering gear. We use the Stutz transmission, the Timken bearings, the Splitdorf and Bosch magnetos. And we use the Sheldon springs—the costliest springs made in America.

These things we buy because we have proved them better than anything we can make. We make in our own shops only such parts as we can make better than others.

Cutting the Cost

Every Marion feature—whether we make it or buy it—has been adopted without regard to cost. If we knew anything better at double the price we would get it.

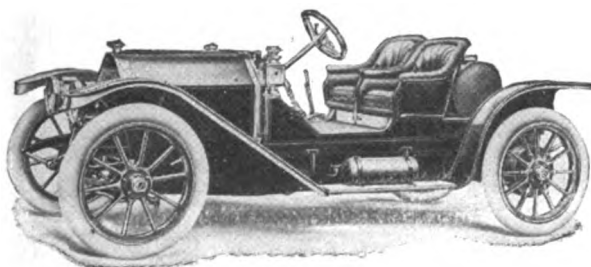
But other men have worked equally well to cut selling cost and overhead expense. We believe there is no other car where so much of the price goes into the making cost.

The 30-horsepower Marions, as a result, sell for \$1,000 to \$1,200. The wheel base is 110 inches. The price includes headlights and magneto.

The Marion "Forty," with 115-inch wheel base, sells for \$1,600 and \$1,650. Compare that with other 40-horsepower cars. The car nearest this "Forty" in style and features is selling for \$2,850.

Come and see these Thousand-Man cars. Let us explain why each device was adopted—how we proved it better than others. If you cannot come, please write for our catalog, showing all the new Marion models.

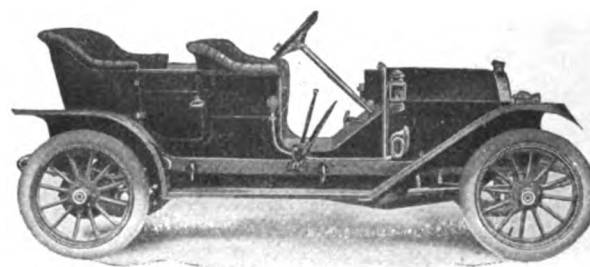
THE MARION SALES COMPANY, Indianapolis, Ind.



With 30 Horsepower—110-inch Wheel Base—\$1,000
With 40 Horsepower—115-inch Wheel Base—\$1,600

Marion

Licensed
Under
Selden
Patent



With 30 Horsepower—110-inch Wheel Base—\$1,150
With 40 Horsepower—115-inch Wheel Base—\$1,650

"Firestone"

Has the only quick removable solid rubber tires in actual service at the auto shows or anywhere else.

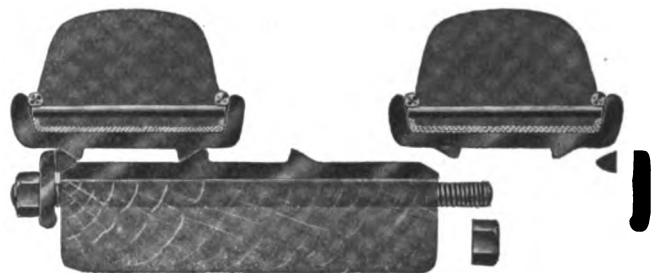
Always a year or two ahead in real improvements,
we offer after two years of successful test

"Firestone" QUICK REMOVABLE

Side-Wire Tires and Rims—Ensuring Quick Tire-changes for Your Trucks on the Spot.



Single tire and rim mounted
on a wheel.



Sectional view of dual tire, showing how
easily the tire and rim are removed.

No new tires to buy, no larger size required. Retain your present tires in use and merely add the rims.

Remove your injured tires at will, to have them repaired or rebuilt before they are too far gone.

Firestone users save many thousands of dollars annually by such repairs—an exclusive feature of the side wire tire.

55% LEAD AT THE CHICAGO TRUCK SHOW!!

As a matter of course, Firestone Side-Wire tires outnumber all others on exhibit cars at the shows.

Every representative auto show emphasizes Firestone, supremacy in numbers, just as every business day shows Firestone superiority in actual service.

*See Firestone QUICK REMOVABLE Side-Wire Tires on
Leading Trucks at the shows. Ask for a demonstration.*

THE FIRESTONE TIRE & RUBBER COMPANY, Akron, Ohio

"America's largest exclusive
tire and rim makers"

100 service Stations to give you
best and quickest service

Line of un-
excelled cars
at unequaled
prices.

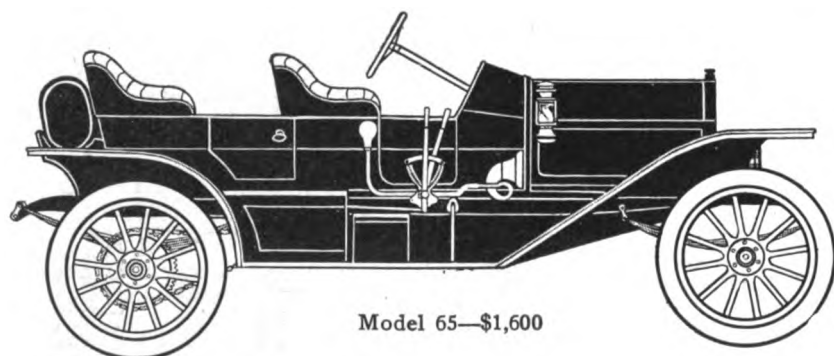
Seven Models,
\$850
to \$1600



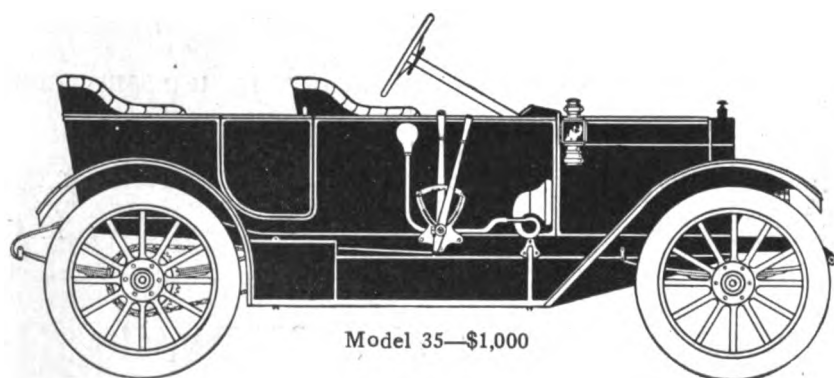
The car for
any weather
— especially
bad weather

Quality in a motor car is like temper in a race horse—it gives speed, vitality, value.

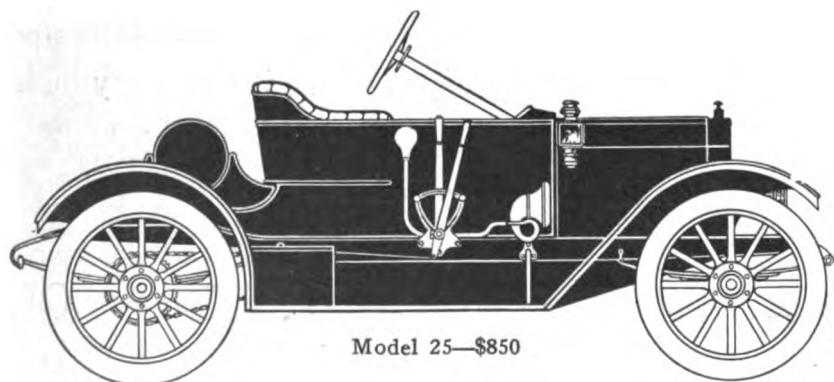
PETREL CARS are like thoroughbreds, full of energy, supplied with abundant power and built of such well tempered materials—with such precise finish that they may be relied upon for almost any unusual performance.



Model 65—\$1,600



Model 35—\$1,000



Model 25—\$850

In spite of the excellent quality throughout PETREL CARS, they are sold at prices surprisingly low. That's because they are produced by the most modern, up-to-date methods and sold as close to the cost of production as is consistent with the most careful business methods.

Let us tell you where you can see these splendid cars in your locality and explain to you why PETREL CARS contain more real value for your money than any other on the market.

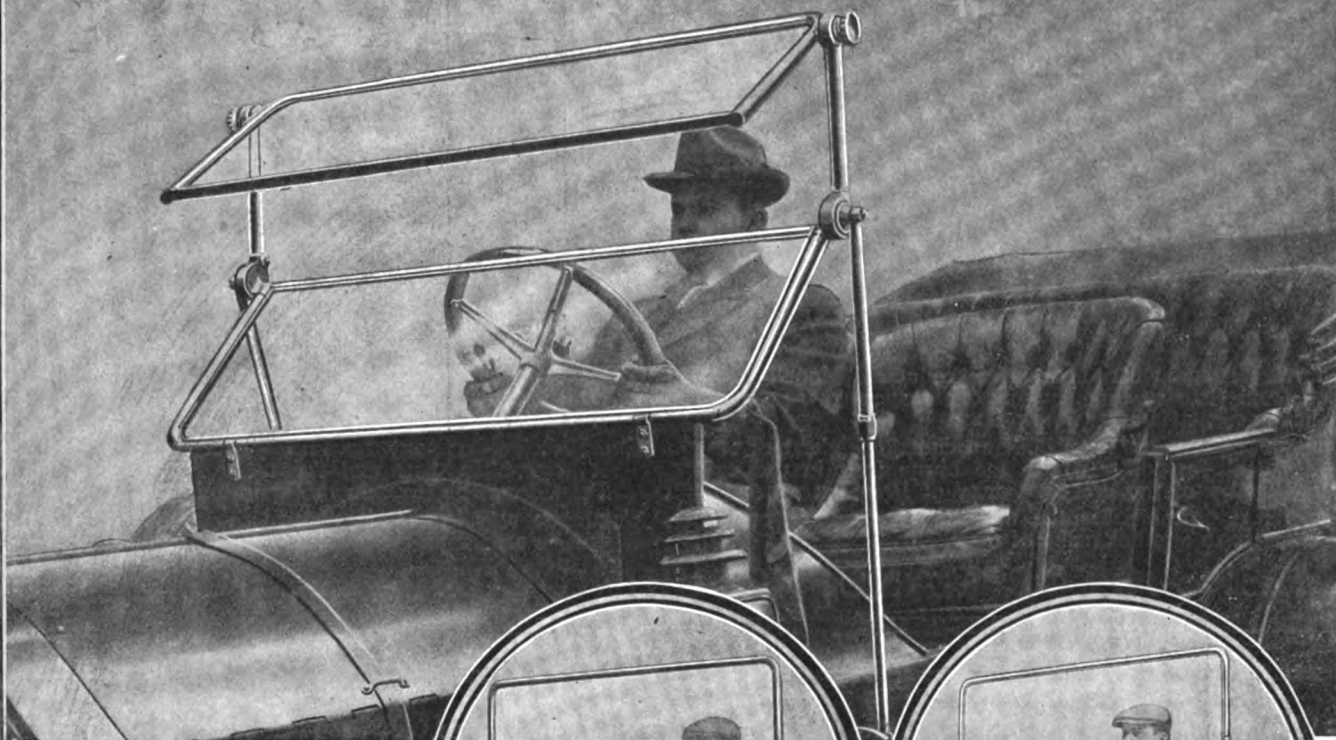
Petrel Cars will be exhibited at Minneapolis, Space 38, Armory, February 18th—February 26th.

At Kansas City, Space "K," Convention Hall, February 27th—March 4th.

Petrel Motor Car Co.
4th Avenue and Virginia Street
MILWAUKEE, WISCONSIN

STANDARD FRICTION

The "Shield Show" at the Auto Shows



The STANDARD FRICTION Shield took show visitors by storm.

It represents modern wind shield construction reduced to its simplest form. It signifies that the art has been wrenched from the hands of experimenters and tinkers and given serious thought by automobile engineers.

Everything about the STANDARD FRICTION Shield denotes the advent of inventive genius and the touch of mechanical skill.

We have evolved a friction hinge that, practically, will not wear out. Thus the cause of rattling has been eliminated. We have designed a pawl and ratchet lock with a bull dog-like grip. The STANDARD FRICTION will not blow down—because it isn't that kind of a shield.

It will pay you to learn more about the STANDARD FRICTION Shields. See them at your dealer's. In the meantime send for catalog.

THE EAGLE COMPANY, Automobile Dept.,
98 Warren St., Newark, N. J.



Glass	36 in.	41 in.	44 in.
Plate	\$25.00	\$27.50	\$30.00
Coach	22.50	25.00	27.50

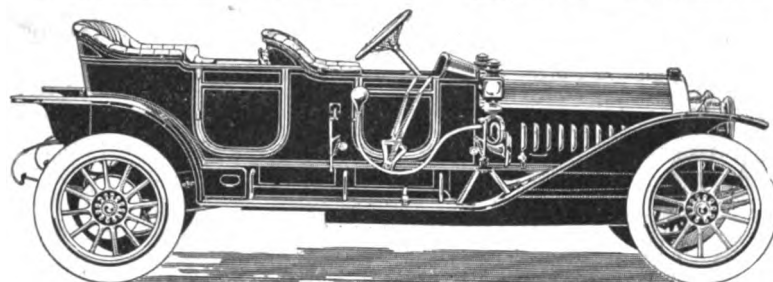


Glass	36 in.	41 in.	44 in.
Plate	\$27.50	\$30.00	\$32.50
Coach	25.00	27.50	30.00



Style and Glass	36 in.	41 in.	44 in.
Vertical—Plate	\$32.50	\$35.00	\$37.50
Ziz-Zag—Plate	35.00	37.50	40.00

PREMIER



Premier 6-60 Clubman

The Proven Car of Quality

For seven years Premier cars have been produced. Models have changed from time to time, but in one respect the Premier policy has never deviated.

Mechanically every car has been built around the highest of engineering ideals—a policy which has borne fruit in the unwavering loyalty of the great majority of Premier owners.

This policy is responsible for the fact that a Premier owner rarely changes to another make of car.

To this policy are directly traceable the long life of Premier cars, and their extraordinary performances in the stress of national reliability contests and severely-trying private service.

The Premier Company has faithfully followed its ideals because it believes in them and because it believes in making every Premier car an investment for its purchaser.

Catalogue and literature, picturing and describing all models, will be sent upon request to Dept. S.

PREMIER MOTOR MANUFACTURING COMPANY, Indianapolis, Ind.

ECONOMY

Economy is the keynote of all motor trucks, and without it the purchaser is buying a white elephant.

CONVENIENCE

Why the Economy is Economical—Because of Unit Assembly

Economy Engines can be entirely removed or replaced in 45 minutes, transmission in 35 minutes, radiators in 15 minutes and jack shafts in 20 minutes. Either part without disturbing the other two, and all without disturbing the body.



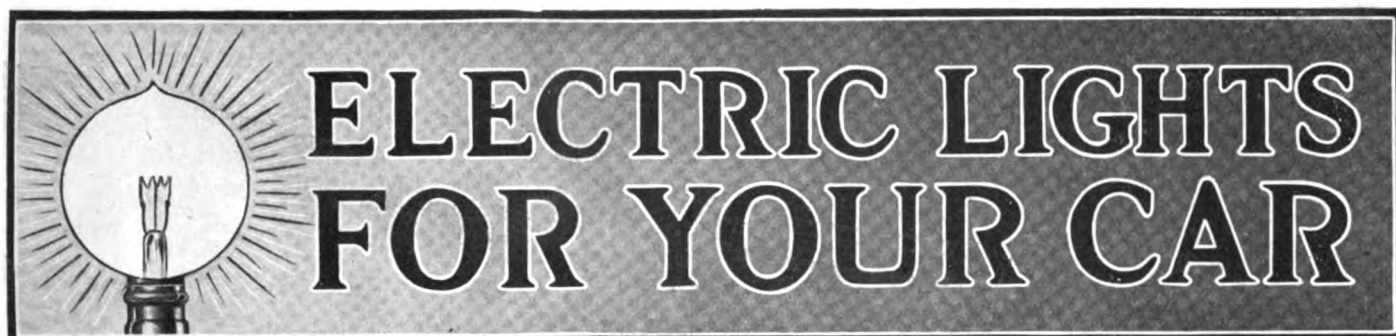
This spells economy and convenience.

Back of it all is one of the largest exclusive truck factories in the west.

Send us an inquiry and let us show you why.

TWO CAPACITIES—1000 LBS. AND 2000 LBS.

ECONOMY MOTOR CAR COMPANY, Bissel and Cass Streets, Joliet, Ill.



ELECTRIC LIGHTS FOR YOUR CAR

GRAY & DAVIS Dynamo System For Your Automobile

The Gray & Davis Dynamo System is a remarkable convenience. It greatly increases lighting efficiency and possesses so many features of exceptional merit that it becomes a real automobile necessity. And please remember—this system accomplishes results unobtainable in any other system.

Constant Speed Dynamo driven from engine.
Governor takes care of excessive speed.
Lights all or part of your lamp equipment—as you desire.

Charges your batteries. Light will not bother motorists coming in opposite direction.
Compound Wound when lighting lamps.
Shunt Wound when charging batteries.

No complications.

Operates power horn.

Lights inspection lamp of 16 c. p.

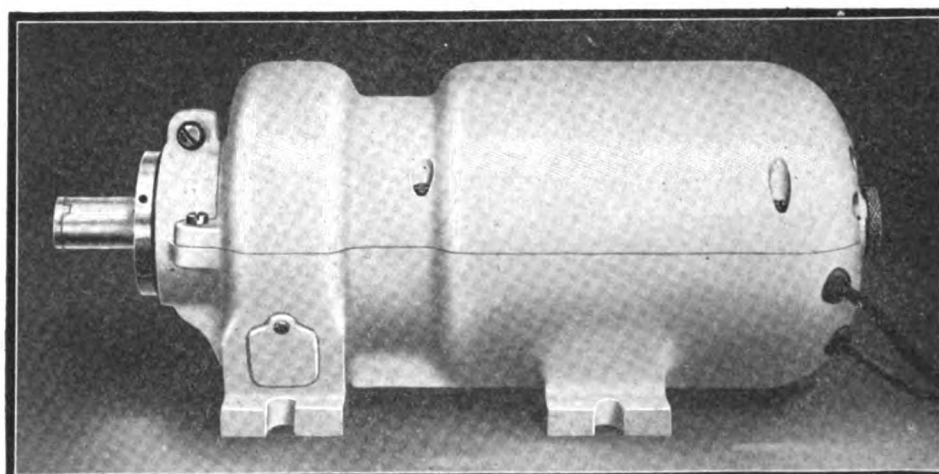
Saves time and trouble of lighting lamps.

Electric light rays easily and quickly adjusted—a turn on a thumb-screw puts light where you want it.

Eliminates worries regarding empty gas tank.

GRAY & DAVIS, Manufacturers of Automobile Lamps Amesbury, Mass.

Write us to-day for very interesting booklet. Fully describes the Dynamo System and the famous Gray & Davis line of lamps.



Overland

"There's the Car I Want—

I want it because it's just my idea of what a car should be—handsome—strong—with a striking and stylish appearance—backed by a motor of strength and efficiency."

The man who made this remark was just one of the thousands of OVERLAND admirers at the New York Show, and he bought the car too.

The people who see the cars are amazed when they learn the OVERLAND value. They cannot believe their own eyes when the magnificent OVERLAND fore door is pointed out to them. This car is such a beauty—such a car of grace and character.

And it is a brand new fore door machine—with the flush body giving an extra six inches to each seat. Not one of those out-of-date 1910 open front models with a pair of doors patched on the front. The OVERLAND fore door is a brand new creation. Be careful when you purchase your fore door and see that you don't find yourself with an antiquated model. The safe way is to buy an OVERLAND.

But aside from our fore door feature the backbone of the OVERLAND is worth your consideration. It is a car truly built to last and work. The daily performance of the motor has no equal of a given size. Always ready—always willing and anxious to work like a beaver—steady, regular and economically. Make a note of the large OVERLAND wheel base—the size of the wheels. Note all the specifications—the inside facts—and see how much you get for your money.

There is an OVERLAND dealer near you—look him up. He will show you dollar for dollar value in a motor car or send for catalogue I, which describes the entire line selling from \$775 to \$1675.

THE WILLYS-OVERLAND COMPANY, Toledo, Ohio



TALL TALE OF \$100,000,000 MERGER

Christian Science via Wall Street Discovers
Morgan, Rothschilds and Flanders in It
—Flanders Denies it.

Christian Science has been responsible for some wonderful things, but whether it is to play any part in the formation of a hundred million dollar automobile merger has become a matter for speculation. The Christian Science Monitor at any rate is responsible for a story that such a merger is in process, and though the story is generally derided and was promptly and positively denied by the one man concerned whom it was possible to reach, Walter Flanders, when it was put up to him by a Motor World representative, another man in the trade who assumed a wise look, expressed the belief that "there's a hen on somewhere," to employ his language, though he, too, laughed at the idea of a \$100,000,000 hatching, even if the "hen" succeeded in bringing forth a chick of any sort.

The Christian Science publication, which usually is not looked to for financial or industrial news, attributes the report of the "\$100,000,000 automobile trust" to "trust-worthy information from Wall Street sources," which stated that "Boston was to become the center of interest" in connection with it.

"Representatives of the J. P. Morgan and the Rothschilds interests and the capital of some men who were connected with the Licensed Automobile Dealers' Association, together with \$9,000,000 belonging to Walter Flanders, the Detroit automobile manufacturer, are reported to be behind the deal," according to the Monitor, and the plan is said to be not to purchase automobile factories or factories making automobile parts, but the factories that make the machinery that make the parts, not only for automobiles but for motorcycles and aeroplanes, and all patents thereon, which

is rather a tall order for even a \$100,000,000 enterprise. The Christian Science paper declares, however, that negotiations are pending in Boston for the purchase of one of the largest machine shops in Providence, that make machines that turn out parts for automobiles, and that "representatives of the Morgan-Flanders interests, while not in search of capital, are getting financial information for the big deal;" also that they "are ascertaining just what factories there are in New England that manufacture parts for automobiles, how much business they do annually, for what automobile companies, and inquiring as to the possibilities of getting into the projected combine."

United States Tire Completes Organization.

The United States Tire Co., which has taken over the sales departments of the Hartford, Morgan & Wright, G & J and Continental Caoutchouc companies, has completed its organization by selecting the men for the offices which had remained unfilled. The official slate as finally completed is as follows: President, E. S. Williams; vice-president, C. J. Butler; treasurer, E. J. Hathorne; assistant treasurer, M. R. Feltes; secretary, Samuel Norris; assistant secretary, P. O. Eckhardt; general manager, J. M. Gilbert; general sales manager, J. D. Anderson.

The United States company has also got down to a working basis much sooner than was anticipated. Evidence of the fact is contained in meetings of the field men of the several districts, which were held yesterday. District Manager Tweedy and some sixty odd salesmen of the Eastern district met in the Hotel Astor, New York, where they were addressed by General Manager Gilbert, Sales Manager Anderson, Advertising Manager Hubbs and Adjuster Meyers. In Chicago, Manager Philp, of the Central district, similarly was in conference with his men at Hotel Blackstone, and Manager Weston, of the Pacific coast district, and his field men reasoned together in the Palace Hotel in San Francisco.

PEN PICTURES OF FINE PROFITS

Sketched by Charles Austin Bates—Profits
Are Savings that Come of Buying Stock
in \$5,000,000 Company.

If anyone has \$100 to invest, the United Motors Co. holds a warm welcome for him. That sum will entitle him to ten shares of preferred stock in the company. If, however, he delays too long, or until the company secures one thousand stockholders, he will have to pay \$110 for the same number of shares; for when 1,000 stockholders are enrolled the price of the stock immediately will be advanced to \$11 per share. At present the company states that it has two hundred stockholders, but it does not intend to stop at one thousand, for its prospectus declares its purpose to "secure as stockholders 5,000 owners of automobiles."

The United Motors Co. is of recent origin. It is incorporated under the liberal laws of Delaware and has capital stock of \$5,000,000, equally divided into preferred and common shares. Its general offices are located at 2 West 33d street, New York, where it appears to be closely linked with the Fidelity Bond & Mortgage Co., which is located at the same address. In fact, the motors company and the bond and mortgage company occupy the same offices, the former being so new that its sign does not yet appear on the door of the premises. Its officers are Arthur C. Wescott, president; Charles Austin Bates, vice-president; Joseph A. Miller, treasurer; Frank DeWitt, secretary; all of whom are identified with the Rutherford Rubber Co., of Rutherford, N. J.; Bates is also president of the Fidelity Bond & Mortgage Co., which helps to explain matters. Not so long ago he was a picturesque figure in the advertising agency business, and his gift for glowing words is amply reflected by the printed matter of the United Motors Co., in which his handiwork is plain.

At this moment the United Motors Co. has stock, not motors, for sale. It comprises the Rutherford Rubber Co., although its letterheads and circulars also bear the name Detroit Commercial Car Co., Detroit, Mich., which concern, however, never cut a figure in the automobile industry and which, according to Detroit reports, has dissolved and quit business.

When seen by a Motor World man Mr. Bates, however, stated that these reports were incorrect, as the Detroit company had undergone no change of name or makeup, but merely had passed ownership to the United Motors Co. He admitted that it possessed no plant, but declared that it was negotiating for factory sites in two different towns, and added that William Walker, of the Walker Catering Co., of Detroit, who was identified with the Barnes Motor Car Co., which only recently went on the financial shoals, and a Mr. Stuart, a Detroit engineer, are the men who are directing the Detroit end of the business.

At present the United Motors Co. is using the Rutherford Rubber Co. as its chief magnet. The man who purchases United Motors stock—and he can pay for it on the instalment plan, too—will have "the privilege of immediately purchasing tires and tubes at practically the cost of manufacture," and later, that is, when one thousand stockholders are secured, "an accessories department will be established," and the stockholders will have "the privilege of buying practically all their accessories at trade prices." The savings effected on such purchases will, of course, leave the stockholder "a clear net profit."

These savings are to be effected in the way outlined by the prospectuses of very many other promoters of co-operative institutions—by eliminating the cost of advertising and the profits of dealers, jobbers and branch houses. But despite this fact the United Motors Co. has some affection for the dealer. "Later, when we increase our plant," says one—but not all—of its circulars, "we must sell our surplus to dealers."

Meanwhile the tires and tubes are to be sold to stockholders at "practically the cost of manufacture," but nevertheless the cash paid for the stock, according to the Charles Austin Bates logic, "goes immediately into the treasury of the United Motors Co." and will be used "for the development of other departments" of the business, and later, "as funds are available," the company will proceed "to the acquisition of additional going automobile plants and engine works, a body building plant and, eventually, to build every part of its cars in its own plant."

Apart from the privileges and savings and dividends that are offered, the United Motors Co. also promises to stockholders "liberal payment for any assistance they may render the company in the sale of its motor trucks, automobiles and tires."

FRANCE'S ENORMOUS EXPORTS

Its Foreign Trade During 1910 Attained a Total of \$36,000,000—Where the Cars and Parts Went.

Although French exports of automobiles to the United States have fallen off fully 40 per cent., there has been such an increase in the exports to other automobile-buying countries that the total for the year 1910 exceeds the record figures of 1909 by \$7,000,000, representing a gain of over 23 per cent., the figures for the two years being \$36,300,800 and \$29,322,600 respectively.

First place among buyers of French cars belongs to Great Britain, which alone took \$14,349,400 worth during the twelve months of 1910, as against \$12,568,800 in the same period of the preceding year. The greatest actual gain, however, is shown by Belgium, which increased its purchases to the tune of \$1,979,200, reaching the high mark of \$6,348,000. The greatest proportionate gain was registered by Italy, which took \$1,112,000 worth as against \$577,000 worth in 1909, a gain of 92.8 per cent.

Of the fourteen geographical divisions enumerated in the French statistics, only two registered losses, these two being the United States and Spain, which together were responsible for a decline of \$804,000. The figures relating to the United States, as published by the French, do not quite agree with those recorded in the United States Import statistics, the difference of about \$100,000 being in favor of the United States, which debits itself with \$1,066,356 while the French figures only name \$959,800 as the value of French cars imported into the United States.

The report in detail is as follows:

Countries	1910	1909
England	\$14,349,400	\$12,568,800
Belgium	6,348,000	4,368,800
Germany	2,795,800	1,980,400
Argentina	2,087,600	1,225,600
Algeria	1,898,200	1,770,200
Italy	1,112,000	577,000
Russia	1,096,400	881,800
Switzerland	995,200	587,400
United States	959,800	1,610,600
Brazil	533,600	378,800
Spain	513,200	667,200
Austria-Hungary	213,600	161,400
Turkey	140,400	119,400
Other Countries	3,257,600	2,425,200
Total	\$36,300,800	\$29,322,600

Ohio Dealers Fight One-Cent Verdict.

The Central Ohio Motor Car Co., of Columbus, has a verdict of one cent hanging over it and, although well able to pay it, it has refused to do so, or at any rate has done what amounts to the same thing; the company has applied for a new trial of the case. The munificent award was obtained by Edgar L. Gold, who brought

suit to recover a car which he claimed the company wrongfully withheld and who wanted not only the car but damages. The court decided that he was entitled to the car and that he had sustained damage to the extent of one large red cent.

Fredson E. Bowers Dies in Chicago.

Fredson E. Bowers, president of the Gilbert Mfg. Co., of New Haven, Conn., died on Thursday last, 9th inst., in the Congress Hotel, Chicago, where he contracted pneumonia while in attendance at the automobile show. He was in his 39th year. He leaves a widow and one child, a four-year-old boy. His remains were taken to New Haven for burial. In addition to being president of the Gilbert company, Mr. Bowers was the inventor of most of the tire cases and other fabric specialties which the company produced; he also was the inventor of the carburetter bearing his name.

To Build King Cars of Few Parts.

The King Motor Car Co., which last week was incorporated under the laws of Michigan, will locate in Detroit where it purposes producing a 30 horsepower car which it is claimed will contain only about 450 parts, which is about one thousand less than are contained in the average car; it is the invention of Charles B. King, who is vice-president of the company. H. Kirke White is president and E. C. Hough secretary and treasurer. Detroit and Cleveland capitalists are said to be backing the venture.

Detroit Dealer Killed in Accident.

Harry Nederlander, the Haynes agent in Detroit, Mich., was instantly killed early Tuesday morning last, 14th inst., when the car he was driving skidded head on into a telegraph pole. He was 30 years of age. In the same accident Nederlander's brother, David, and Paul R. McKenney, manager of the Brush-Detroit Motor Car Co., were badly injured, and four others, including four women passengers, sustained minor hurts.

Dayton Agents Sue for Rebates.

The Ohio Automobile Co., of Dayton, O., has filed suit in the United States Circuit Court in Cincinnati against the Ford Motor Co., of Detroit, Mich., to recover \$19,767.51 claimed to be due under an agency contract. The petition states that the plaintiff sold 114 automobiles and is entitled to certain rebates stipulated in the contract. The Ford company claims that the Dayton concern broke its contract.

Warren-Detroit Plant to be Enlarged.

The Warren Motor Car Co. has let contracts for the erection of a two-story addition, 68 x 178 feet, to its factory in Detroit. Work on it will be started this week.

\$45,000,000 STUDEBAKER IN BEING

New Corporation Formally Organized Under Laws of New Jersey—Additional Facts and Figures are Disclosed.

The Studebaker Corporation, which as exclusively stated in the Motor World of February 2d, would be formed to take over the carriage, wagon and electric automobile interests of the Studebaker Mfg. Co. and the Studebaker Automobile Co., South Bend, Ind., and the E-M-F Co., in Detroit, which is owned by the Studebakers, was formally incorporated under the laws of New Jersey on Tuesday last, 14th inst. Its authorized capital is \$45,000,000, of which \$15,000,000 is 7 per cent. cumulative preferred, and \$30,000,000 common.

The process of incorporation disclosed that the purchase involved the acquisition of \$7,447,253 in cash, but excepts certain holdings of the two absorbed companies. Among the excepted properties are dwellings, stores and a theater in South Bend and certain property at 16th and Wabash streets, Chicago. The property bought is to be paid for in stock of the Studebaker Corporation of the par value of \$43,498,000, of which \$13,500,000 is to be preferred and \$29,998,000 common stock.

The Studebaker and E-M-F properties have been bonded to the extent of several millions, the bonds being held by J. P. Morgan & Co., of New York, and as the Motor World stated on the 2d inst., the arrangements which led to the formation of the new \$45,000,000 corporation require the retirement of these bonded obligations. This retirement will make the preferred stock a first lien on the property of the new corporation and it is understood that provision also has been made whereby no prior obligation can be contracted without the consent of the preferred shareholders; likewise, it is provided that no dividends be paid on the common stock until a certain fixed amount of working capital has been accumulated, for which the net profits from the sale of \$13,500,000 preferred stock to New York and London banking houses are expected to provide a good foundation.

More Spring Wheel Stock for Sale.

"To do away with pneumatic tires," the dream of almost countless inventors, the Detroit Wheel Co. was last week incorporated under the laws of Michigan with \$1,000,000 capital stock, to manufacture the Moore spring wheel. On Sunday advertisements in the Detroit papers offered the public \$50,000 worth of the stock at \$5 per share, which is just half its face value. The cut price was made as the company needs the money "for the purpose of erecting and equipping the necessary factories."

Although bearing the name "Moore," the spring wheel is said to be the invention of Charles R. Chesholm, of Boston, Mass., who, with Fred A. Sweitzer and Adolphus W. Wier, a Detroit attorney, constitute the incorporators of the company. Mr. Chesholm went to Detroit some two months ago and appears not discouraged by the fact that L. L. Rodgers and his "Unika" spring wheel, also of Boston, had immediately preceded him to the Detroit city and had unsuccessfully sought to induce the Michigan public to get rich by helping him to put the pneumatic rubber tire out of business.

Stromberg Opens Northwestern Branch.

Pursuing the aggressive policy that so quickly brought the Stromberg carburetor to the forefront, the Stromberg Motor Devices Co. has established a Northwestern branch at 1514 Hennepin avenue, Minneapolis, and is preparing to locate similar branches in several other important centers. The Minneapolis depot is in charge of Harvey Goodwin, former manager of the Stromberg branch in Boston, Mass., and the vacancy created by Goodwin's transfer has been filled by the appointment of H. M. Coulter, formerly special factory representative of the Stromberg company.

Ann Arbor Acquires an Automobile Plant.

The Huron River Mfg. Co., of Ann Arbor, Mich., has commenced operations in the factory which originally was designed for the Fawn River Mfg. Co., which purposed manufacturing magnetos but which never did so. The building is a one story brick structure, 256 x 40 feet. The Huron River company, which is capitalized at \$100,000 and of which E. D. Hiscock is president, will produce a convertible passenger and freight car employing a two cylinder opposed motor.

Corporation Takes Over Warner's Business.

The Warner Mfg. Co., of Toledo, O., a co-partnership which recently added engines to its other productions, has been taken over by the Warner Motor Co., a \$10,000 Ohio corporation, which was formed for the purpose. Thomas W. Warner remains the leading spirit in the enterprise. W. Rexford Smith, E. Stanton Janney, Louis S. Stewart, Frank G. Burt and George S. Moore figure as the other incorporators.

Foster Starts to Cross Continent.

C. H. Foster, of the Gabriel Horn Mfg. Co., of Cleveland, Ohio, and a party of friends have started on an overland trip to the Pacific coast, which will last for about four months. While Foster is primarily bent on pleasure and sightseeing, he will not overlook business, and as his car is equipped with a Gabriel ten tube musical horn, that he "will have music wherever he goes" is certain.

THOMAS DEAL IS CONSUMMATED

New Company, Formed by New York Bankers, Acquires the Business—E. P. Chalfant Selected to Manage It.

After being held up for nearly two weeks by the reluctance of a New Jersey creditor to agree to the terms outlined by the creditors' committee, the offer of Eugene Meyer, Jr., & Co., the New York bankers, for the business of the E. R. Thomas Motor Co., of Buffalo, N. Y., finally was accepted yesterday (Wednesday) and the assets secured have been turned over to the E. R. Thomas Motor Car Co., of New York, a \$2,400,000 corporation which had been formed in anticipation of the consummation of the negotiations.

The president and general manager of the new company will be E. P. Chalfant, who has been serving as assistant sales manager of the Packard Motor Car Co., of Detroit, and who previously was general manager of the Association of Licensed Automobile Manufacturers. Before assuming the latter office he was identified with the Waltham Mfg. Co. With Chalfant will go several other Packard men, among them W. L. Gleason, manufacturing superintendent, and F. R. Humpage, purchasing agent. Mr. Thomas himself retires absolutely from the company bearing his name.

When Banker Meyer himself was asked yesterday by a Motor World representative whether Chalfant's new office indicated that Packard interests were represented in the new Thomas company, he responded in the negative. He declared that he himself owns some 80 per cent. of the new Thomas stock, and far from being interested, he added that the Packard people were "rather annoyed" at the sudden change of their men who had joined the Thomas establishment. The Meyer interests will be directly represented in the factory at Buffalo by Edgar Meyer, a brother of the banker, who, at the request of his brother Eugene, gave to the Motor World the details of the new arrangement. Edgar Meyer is an engineer and a capable appearing man, and said that he would take a "practical interest" in the new company's affairs and do what he could to assist in producing the very best six cylinder car it is possible to produce.

The consummation of the deal is the outcome of long and trying effort on the part of a creditors' committee headed by W. H. Crosby, of the Crosby Co. The committee found the Thomas affairs badly involved, and the straightening out required much patience and drastic paring and pruning. By the terms of sale to Meyer & Co., the creditors will receive 100 cents on the dollar.

Meyer & Co. purchased \$430,000 worth

of the E. R. Thomas Motor Co.'s first preferred stock, receiving in return all of the common stock, and all of the Thomas business, assets and good will, excepting buildings, real estate and equipment, and a claim of about \$285,000 against the Thomas Motor Cab Co. Of the purchase price, 20 per cent. was paid in cash and the remainder in three interest bearing notes, the last one payable August 1, 1912.

The real estate and other reserved property will be conveyed to trustees for the account of E. R. Thomas, personally, at a valuation of \$390,000, in consideration of his having paid \$600,000 due to banks, the balance of the indebtedness, \$210,000, to be paid in 6 per cent. notes of the new company, one-half payable February 15, 1913, and the other half one year later. The property, however, will be held by the trustees until all the notes given creditors have been liquidated. To Mr. Thomas there also will be assigned the claim of about \$285,000 against the Thomas Motor Cab Co. For the property conveyed to the trustees, the new company will pay an annual rental of \$23,400 for a period of five years, and it will also be given an option to purchase it for \$390,000.

Of the capital of the new E. R. Thomas Motor Car Co., \$400,000 will be 7 per cent. preferred shares and \$2,000,000 common.

Accessory Catalogs for Every Dealer!

The country is threatened with a flood of accessory catalogs. One of New York's so-called "discount houses," which sells "only to owners at trade prices," and thereby "saves" the owner the "dealer's profit," is now seeking to sell ready-made catalogs to the dealers in lots of 1,000 or more. The catalogs are all alike except as to the names on covers. They, of course, list the "specialties" of the "discount house," but in order to leave no end of the industry unworked, the alleged "discounters" with characteristic effrontery also submits to manufacturers terms under which he will consent to include their wares in his "dealers' catalogs."

Case Making More Room for Cars.

The J. I. Case Co., of Racine, Wis., is enlarging its automobile plant by the addition of two buildings, 200x62 feet, one of which will be completed early next month and the other about three weeks later. The company has abandoned the manufacture of the Pierce motor boats and engines and has added the space devoted to those products to the automobile plant.

Croxton to Remove to Cleveland.

The Croxton Motor Co., of Massillon, Ohio, shortly will remove to Cleveland, in the same state, negotiations to that end having been completed late last week. It will locate in the five-story factory building on East 69th street, which previously the Baker Motor Vehicle Co. occupied.

THE WEEK'S INCORPORATIONS.

Chicago, Ill.—Pope-Hartford Motor Car Co., under Illinois laws, with \$25,000 capital; to deal in automobiles. Corporators—William Kendall, A. Stahl, O. D. Luby.

Omaha, Neb.—Cadillac Co., under Nebraska laws, with \$50,000 capital; to deal in automobiles. Corporators—George F. Reim, W. R. Drummond, A. L. Schantz.

Monroe, Wis.—Square Deal Auto Co., under Wisconsin laws, with \$10,000 capital; to deal in automobiles. Corporators—G. P. Miller, R. Hokanson, W. M. Thompson.

Clyde, Ohio—Clyde Auto Sales Co., under Ohio laws, with \$5,000 capital; to deal in automobiles. Corporators—E. Van Benschoten, Dexter E. Perrin, M. E. Perrin, M. L. Huss.

Wadsworth, Ohio—Wadsworth Motor Co., under Ohio laws, with \$10,000 capital; to deal in motor vehicles. Corporators—M. F. Miller, C. Niswander, Oscar Simcox, Bertha Simcox.

Hannibal, Mo.—Hannibal Auto Livery Co., under Missouri laws, with \$7,500 capital; to maintain a motor livery service. Corporators—C. B. Brothers, A. G. Kennedy, E. F. Parkham.

Millburn, N. J.—Millburn Motor Car Co., under New Jersey laws, with \$50,000 capital; to manufacture and deal in motor vehicles. Corporators—J. C. and H. Wittkop, of Millburn, N. J.

Cincinnati, Ohio—Evans-Eich Mfg. Co., under Ohio laws, with \$5,000 capital; to manufacture automobiles. Corporators—William C. Evans, Clara Evans, Wendel Eich, Ella Eich, Earle C. Blair.

Waterbury, Conn.—Star Garage Auto Co., under Connecticut laws, with \$1,500 capital; to maintain a garage service. Corporators—Arthur F. O'Leary, Michael D. Russell, John P. Grimes.

Dallas, Texas—Texas Auto Specialty Mfg. Co., under Texas laws, with \$25,000 capital; to manufacture automobile parts and accessories. Corporators—L. L. Lane, H. H. Moore, Jennings M. Moore.

Louisville, Ky.—W. H. Gillette Mfg. Co., under Kentucky laws, with \$100,000 capital; to manufacture automobile and carriage supplies. Corporators—W. H. Gillette, W. L. Gillette, C. H. Lambert.

Memphis, Tenn.—Inter-State Motor Sales Co., under Tennessee laws, with \$3,000 capital; to deal in motor vehicles. Corporators—J. H. Hines, R. T. Ronaldson, L. C. Hudson, Guy Davidson, Charles B. Keeler.

Waushara, Wis.—Security Spring Tire Co., under Wisconsin laws, with \$50,000 capital; to manufacture patented spring tire. Corporators—W. J. Durham, F. S. Durham, B. F. Fry, H. A. Fry, G. J. Bruce.

Cleveland, Ohio—Mora Power Wagon Co., under Ohio laws, with \$750,000 capital; to manufacture motor trucks, Corpora-

tors—Millard H. Nason, Robert P. Abbey, Thomas S. Dunlap, A. T. Hatch, H. A. Mulen.

New York City, N. Y.—Beecher Taxicab Co., under New York laws, with \$25,000 capital; to maintain a garage and taxicab service. Corporators—C. H. Beecher, E. J. Owens, G. Beisewenger, all of New York City.

Upper Sandusky, Ohio—Indian Motor Car Co., under Ohio laws, with \$10,000 capital; to manufacture automobiles. Corporators—S. W. Martin, M. M. Stoneburner, William Olfp, Estella M. Olfp, Thomas O'Brien, M. A. O'Brien.

Plainfield, N. J.—Saurer Motor Truck Co., under New Jersey laws, with \$1,600,000 capital; to manufacture and deal in commercial motor vehicles. Corporators—Daniel W. Yeckley, of Arlington, N. J.; Henry B. Ranken, of Port Washington, N. Y.; Charles S. Fellows, of New York City.

New York City, N. Y.—E. R. Thomas Motor Car Co. of New York, under New York laws, with \$2,400,000 capital; to manufacture and deal in automobiles. Corporators—Frederick G. Braun, John M. Greenfield, Jr., Edward M. Sousa, Joseph F. Foise, Robert Merchant, Jr., all of New York City.

South Bend, Ind., and Detroit, Mich.—The Studebaker Corporation, under New Jersey laws, with \$45,000,000 capital (\$15,000,000 preferred and \$30,000,000 common stock); to manufacture carriages and automobiles, and to acquire the plants and business of the Studebaker Bros. Mfg. Co., of South Bend, and the E-M-F Co., of Detroit. Corporators—M. Gregg Latimer and John O. Marsh, of New York, and John R. Turner, of Basking Ridge, N. J.

Increases of Capital.

Butler, Ind.—Trebert Gas Engine Co., from \$20,000 to \$40,000.

Indianapolis, Ind.—Marvel Carburetter Co., from \$15,000 to \$50,000.

Racine, Wis.—Holbrook-Armstrong Iron Co., from \$150,000 to \$300,000.

Bridgeport, Conn.—Alling Rubber Co., from \$40,000 to \$98,000, and changes location to Hartford, Conn.

Recent Losses by Fire.

Atchison, Kan.—Atchison Motor Co.'s garage and 20 automobiles destroyed; loss, \$50,000.

Battle Creek, Mich.—Emerson Truck Co., garage and warehouse burned; one motor truck damaged; loss, \$20,000.

Oakbrook, Pa.—A. H. Yocom Automobile Works practically destroyed; loss heavy. Company was in hands of receiver and was to have been sold at auction a few days later.

IN THE RETAIL WORLD.

Herman Hegeler is building a garage in Danville, Ill.

George R. Fisher has purchased the garage business of Charles B. Grout, Athol, Mass.

P. J. Lynch is building a garage at 410 Elm street, Rockford, Ill. It will be ready for occupancy on April 1.

Nicol & Wincklhoffer, agents for Jackson cars, have opened a new salesroom at 311 Halsey street, Newark, N. J.

The W. G. Langley Co. has opened salesrooms at 521 North Akard street, Dallas, Texas. It will handle Franklin cars.

The White Castle Auto Supply Co. has been organized in the Louisiana town of that name. F. A. Trepagnier is the manager.

The Petrel Motor Car Co., of Milwaukee, has opened a branch in Chicago at 1508 Michigan avenue. R. G. Richards is its manager.

Ted Hendricks and Bennie Coe, both of Ft. Scott, Kan., have formed a partnership and opened a garage in the Corman building on East First street.

Julian Dozier, of Taylor, Tex., has purchased the garage of John Simms, of Hutto, in the same state, and will continue the business under his own name.

Bonsall & Wilson is the style of a new concern which just has opened a garage in Coatesville, Pa. It is located at the corner of Lancaster and Manor avenues.

The Abresch-Cramer Co., of Milwaukee, has established a branch in Chicago in charge of C. H. Riemer. It will carry a full line of the Abresch-Cramer trucks.

The I. S. Remson Mfg. Co., Brooklyn agents for the Locomobile, have moved from 760 Bedford avenue to 1410 in the same street; the new place affords more room.

W. Hayhurst has purchased the interest of W. F. Copeland in the Copeland-Roach Motor Co., of Watertown, Wis. For the present the business will be continued under the same name.

George D. Harris and F. Seeberger have formed a company under the style the Harris-Seeberger Motor Co., in Creston, Ia. Harris formerly owned a garage in Cedar Falls, in the same state.

E. H. Crummer, formerly of the Smith Auto Co., has purchased the W. E. Bacon garage and machine shop at 928 Kansas avenue, Topeka, Kan., and will continue the business under his own name.

The Independent Owners' Garage Co. has leased from the White Co., of New York, the three and six story garage buildings at 205-213 West End avenue, for a term of years. The rental price aggregates \$175,000.

The firm of Jackson & Quiggle, automobile dealers in Iowa Falls, Ia., has been

dissolved. J. S. Quiggle buying out the interest of his partner, Charles Jackson. The former will continue the business under his own name.

A. Zeckman has opened a salesroom for commercial cars in Minneapolis, Minn., at 807-811 Sixth street, South. He will handle the Atterbury truck, for which he has the agency in Minnesota, Wisconsin and North and South Dakota.

A garage to be 132x132 feet in extent, and capable of accommodating 125 automobiles on one floor, is to be erected at the corner of 11th and Mulberry streets, Des Moines, Ia. It will be occupied by the Independent Auto Co.

The Selby Garage, 414 Selby avenue, St. Paul, Minn., has been purchased by the Torkelson Carriage Co., of the same city. W. Torkelson, the new owner, is a livery man, and the present enterprise is his first venture in the automobile field.

Marc Bunnell and Harold C. Ward have opened a salesroom in San Francisco, Cal., under the style the American Motors Co., with headquarters at 567 Golden Gate avenue. As the name indicates, the American line of cars will be carried.

Organized for the purpose of handling Regal cars, the New Jersey Motor Sales Co., of Newark, N. J., has opened a salesroom at 237 Halsey street, hitherto occupied by the Peerless and Hudson agencies. Isaac B. Guerin is the head of the concern.

Under the style the Memphis Garage & Equipment Co., a new concern has opened up on Madison avenue, in the Tennessee city of that name. J. Ed. St. Clair and S. Grine, of Pittsburg, Pa., and E. E. Loving, of Memphis, are the men behind the enterprise.

The receivership of the Lawrence Kirschbaum Garage & Automobile Agency, of Cincinnati, Ohio, has been dissolved, and the owner remains in full control. The difficulties grew out of overstocking and extensive building operations and were but temporary.

Walter Stoltey, of Champaign, Ill., has purchased one-half interest in the garage formerly owned by Harry Herrick in the same town, and the firm hereafter will be known as Herrick & Stoltey. Oakland pleasure cars and Rapid commercial trucks will be handled.

The Jackson-Marion Sales Co. is the style of a new concern which just has opened a garage and salesroom at 634-36 North Broad street, Philadelphia, Pa. S. B. Vlockson is the manager of the company which, as the name indicates, will handle the Jackson and Marion lines.

Alvan T. Fuller, of Boston, has purchased the entire business of the Flint Motor Car Co., of Providence, R. I., for a consideration of about \$50,000, which includes stock, leases, salesrooms, machinery

and service depots in Providence and Fall River. The deal completes Fuller's control of Packard cars in Maine, Vermont, New Hampshire, Massachusetts and Rhode Island.

Incorporated under the laws of Indiana with a capital of \$10,000, the Central Automobile Co., of Indianapolis, has been formed by George N. Carter, F. S. Chapman and Charles W. Sweet. The company will handle Grabowsky trucks and conduct a general garage business.

For a consideration of \$57,000 the Halsey Automobile Co., of St. Louis, Mo., has purchased two plots of land within the city, on which to erect garages. One is situated at the corner of Euclid and Maryland avenues, and the other at the intersection of Kings highway and Delmar avenue.

Organized with the intention of taking over the business of the Michigan Buick Auto Supply & Garage Co., which a few months ago was launched with "great expectations" but little capital, the Bolton Auto Co. has been formed in Saginaw, Mich., with a capital stock of \$10,000, and headquarters at the corner of Tuscola street and North Washington avenue. F. H. Beach is president and S. D. Bolton secretary of the company.

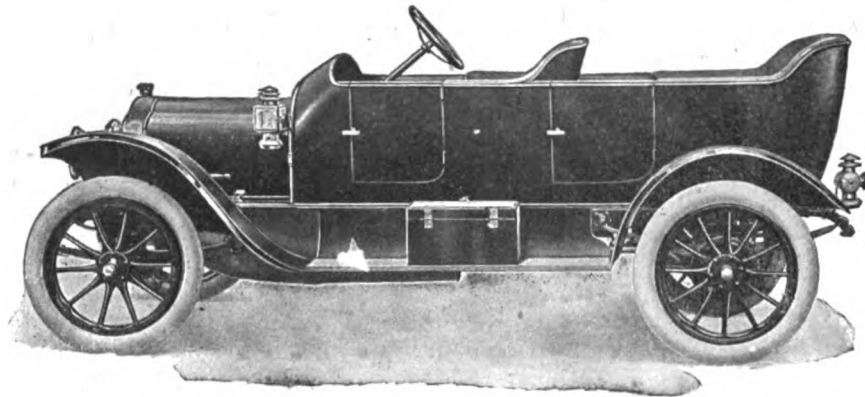
Changes Among Prominent Tradesmen.

James Joyce, one of the veterans of the trade and since its creation sales manager of the American Locomotive Co.'s automobile department, has resigned that office. His successor has not yet been named.

Marcus Allen, manager of the G & J Tire Co.'s New York branch, has relinquished that position and become connected with the Goodyear Tire & Rubber Co., of New York. He will be assistant to Manager Maus.

W. J. Surre, eastern sales manager of the Continental Rubber Works, of Erie, Pa., has been promoted to the general sales-management of the company and about April 1st will remove from New York to the factory in Erie. Surre's successor in the New York office will be G. H. Hamilton, at present assistant sales manager of the G & J Tire Co., of Indianapolis.

In order to devote himself to the Northwestern Overland Co., of Minneapolis, in which he has acquired an interest, Frank W. Libbey has resigned the sales management of the Michelin Tire Co., of Milltown, N. J., and hereafter will have to do with cars instead of tires, the Minneapolis company having the Overland distributing agency for the states of Minnesota, North and South Dakota and Montana. Libbey has been the sales manager of the Michelin Tire Co. since it was incorporated three years ago, and held the same position with the International A. & V. Tire Co., whose property was taken over by the Michelin interests.



The Cost of a Car

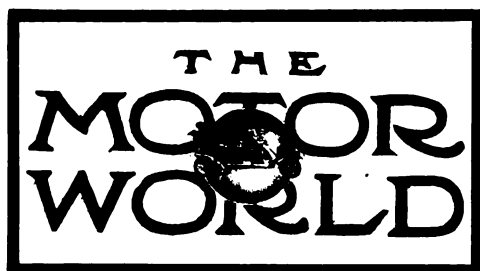
THE cost of an automobile is not what you pay for it, or the initial investment—but what it costs to maintain—the number of miles on a gallon of gasoline—the number of miles on a set of tires—the oil bills—the incidental repairs. It is the answer to this question that either makes a car a luxury afforded by few, or the proper kind of transportation at a reasonable cost.

The White gasoline cars have solved these problems economically. A White gasoline car has a four-cylinder motor cast en bloc, which economizes in size and weight—it has extreme length of stroke, which allows the cylinders to be of moderate size. In consequence, the car is of moderate weight and easy on tires—one of the most important items in up-keep.

The car has four forward speeds, a flexibility found only upon the most expensive cars, which allows the engine to run at a speed more economical, and more suited to the purpose of the driver. Again, White cars are marvels of simplicity, which makes them easy to operate, and easy to keep in order. When it comes to mechanical features, ask any engineer, regardless of his personal bias, and his answer must be that no car is better built. Many agencies now open for White gasoline cars and trucks; also steam passenger cars. Demonstrators should be bought at once for early delivery.


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NEW YORK, FEBRUARY 16, 1911.

"There is not much chance of getting along without the Motor World. Since I left New York I more than ever need the information it supplies; accordingly I enclose the necessary \$2."—H. C. Miller, manager B. F. Goodrich Co., San Francisco, Cal.

Making the Engine Presentable.

Whatever may be said of the modern automobile motor in other respects it is much to the credit of its builders that it is finished in much better fashion than was its predecessor of two or three years ago. Nowhere is the tendency better exemplified than in the enameling of cylinder castings, which is now a regular feature of several of the better known engines, while others, which are "filled" and surfaced after the manner common to the better class of shop machinery, are almost equally as serviceable. The point is that the motor that is attractively finished always presents a neat and attractive appearance.

From the manufacturer's point of view this has value as a selling argument. The prospective owner who is not versed in the technical features of the machine is yet quickly impressed by the "finished" looks of "the works" when the hood is lifted and is capable of appreciating how the finish adds to cleanliness when the fact is pointed out. And when he learns that the finish is a lasting one, that the engine can be kept in its present condition merely by the occasional application of an oily rag, he is quite likely to be even further impressed. To the experienced mechanic, the initial appearance of the machine is not necessarily of much importance. What does appeal to him, though, is the fact that a surface which has been prepared suitably can be kept clean indefinitely with a minimum of trouble. The present trend in design is entirely in the direction of "clean" motors, meaning ordinarily those which are so constructed that their moving parts are protected from dirt and injury from external sources; but it is pleasing also to observe that many of the modern engines also are clean in the literal sense, and so finished that they are destined to remain so throughout their natural lives.

Interchangeable Power Plants.

Jewelers long ago became accustomed to the idea of lending old and battered, but faithful, timepieces to customers who brought in their prize repeaters for repair. But the idea of lending automobile parts on the same basis is still so novel in the industry as to call for especial comment. The motorist who brings in a car with a disarranged motor, for example, expecting the repairman to slip another motor into the chassis in its place and send him on his way rejoicing until his own has been repaired, still is doomed to disappointment. The motor truck driver who brings in a troublesome car, however, if his particular machine happens to be the product of one or two far-sighted manufacturers, is in line for this experience. Indeed, the practice of exchanging motors, or complete power plants, which in some instances amounts to much the same thing, already is well established where certain lines of cars are handled.

That privilege is one of the perquisites, or, rather, one of the conveniences that complete interchangeability of parts and easy demountability are intended to provide. That the practice is not more general al-

ready is due to the tardiness of the manufacturers in producing truly interchangeable types of mechanism and, in some small measure as well, to the user, who has been slow in demanding that such provision be made. With certain of the commercial vehicle manufacturers who undertake the maintenance of their products for a definite period after sale, the plan is being followed with good results. It is so easy to slip out a motor that is acting badly and slip in another that is known to be in good condition, that the exchange is made as naturally as would an exchange of spark plugs under other circumstances.

The beauty of it is that the operator is not bothered with any details of the repair work. The truck need not be delayed materially, the repairs need not be hastened and so the work is well done, which is to say, in many instances, done as economically as possible. In at least one instance where complete engine interchangeability is provided for, the principle is even carried a step further, and two different sizes of engine are employed. Thus, if a customer finds his car a little underpowered for the work it is an easy matter to set him aright, while corresponding latitude is provided to guard against the rapid wearing out of an engine that is under-loaded.

Wherein Electric Vehicles Suffer.

Despite the modicum of success which has attended its exploitation during the past decade it is somewhat surprising that the electric vehicle has developed so small a fund of general information, relatively speaking, as has been the case. Compared with the gasoline machine it is still an unknown quantity in many quarters; that is to say, as far as its inner properties and the proper requirements for its maintenance are concerned.

This may appear strange in view of the large use of electrics in some few cities and towns of the more progressive class. Nevertheless it has been the recent experience of the electric vehicle builders themselves that many of those who are ambitious to handle their products are really incompetent to do so in a satisfactory manner. The objection applies not to owners, but to men who, presumably, are otherwise familiar with the automobile business and who are disposed to become agents for electrics.

In view of the position which the electric is fitted to occupy in the life of its owner,

this condition, however widespread it may or may not be, is a serious one for such of the industry as is devoted to the production and sale of machines of this class. Unlike the gasoline car, the average electric is to its owner a plain utility of most prosaic character. He is no more concerned with the secrets of its construction than he is with those of a gas meter, a telephone or a trolley car. To him it represents a certain amount of service of a special and useful class, service which may be of a business nature to him or one of recreation. Even if he undertakes to look after the charging of the batteries himself, it is to the garageman that he looks for expert advice and attention. In the average case the owner who is anxious to know all about the construction and operation of his gasoline car, is practically devoid of interest in the power plant of his little electric.

Thus it becomes extremely important for the manufacturer to exercise great care in selecting his agents and for the agents to be equally prudent in overseeing the garaging of their patrons' cars. The circumstance that just now, when in many respects the electric vehicle business is as promising as ever it has been, many persons who are not properly equipped to handle the business successfully should be seeking it, is one fraught with unpleasant possibilities unless the situation is properly handled. Fortunately it is generally recognized by electric vehicle men and others whose interests are directly concerned that a campaign of general education is needed, and the first steps to that end already have been taken.

If "Joe" Frelinghuysen, New Jersey's carpet-bag senator, is able once more to prevent the passage of a reciprocity measure and thus keep the highways of that state closed to the rest of the Nation, the rest of the Nation will be forced to retaliate and apply thumb-screws to New Jersey men wherever they may be found. It is a poor rule that does not work both ways. It is distressing to contemplate such a state of affairs, but as Frelinghuysen and his kind appear to care more for the few paltry dollars that an "admission fee" brings the state than for the freedom of movement of its own citizens, as a means to an end the latter must be made feel the full effects of Frelinghuysenism. It means that they must become "marked men" and be spotted wherever they may turn. And

COMING EVENTS

February 11-18, Mexico City, Mexico.—First annual show.

February 13-18, St. Louis, Mo.—Annual show in Coliseum.

February 13-18, Washington, D. C.—Second annual show in Convention hall.

February 13-18, Winnipeg, Canada.—Winnipeg Motor Trades Association's show.

February 13-18, Kansas City, Mo.—Motor Car Trade Association's show in Convention hall.

February 13-18, Dayton, Ohio.—Second annual show in Memorial building.

February 14-18, Memphis, Tenn.—Memphis automobile dealers' first annual show in the Auditorium.

February 15-18, Grand Rapids, Mich.—Grand Rapids Automobile Dealers' Association's show.

February 16-18, Fort Wayne, Ind.—Fort Wayne Automobile Association's first annual show.

February 18-19, Oakland, Cal.—Racemeet on Oakland motordrome.

February 18-25, Binghamton, N. Y.—Annual show.

February 18-25, Minneapolis, Minn.—Minneapolis Automobile Show Association's annual show in National Guard Armory.

February 18-25, Newark, N. J.—New Jersey Automobile Exhibition Co.'s fourth annual show.

February 18-25, Brooklyn, N. Y.—First annual show of Brooklyn automobile dealers at 23d Regiment armory.

February 18-25, Cleveland, O.—Show in Central Armory.

February 18-25, Albany, N. Y.—Albany Automobile Dealers' second annual show in State Armory.

February 20-25, Portland, Me.—Sixth annual show in the Auditorium.

February 20-25, Cincinnati, O.—Cincinnati Automobile Dealers' Association's show in Music Hall.

February 20-25, Hartford, Conn.—Hartford Automobile Dealers' Association's fourth annual show in Foot Guard armory.

February 20-25, Omaha, Neb.—Third annual show of the Omaha Automobile Show Association in Auditorium.

February 21-25, Baltimore, Md.—Annual show in Fifth Regiment Armory.

February 22, San Francisco, Cal.—Panama-Pacific road races.

February 24-27, New Orleans, La.—First annual show of New Orleans Automobile Club at Fair Grounds.

February 24-25, Keene, N. H.—Consolidated Motorcyclists' third annual motor vehicle show.

February 25-27, New Orleans, La.—New Orleans Automobile Club's annual Mardi Gras racemeet on Fair Grounds track.

February 25-March 4, Toronto, Canada.—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-11, San Francisco, Cal.—San Francisco Motor Club's show in Dreamland and Pavilion rinks.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building and Horticultural Hall.

March 6-11, Dayton, Ohio.—Dayton Automobile Club's show in Memorial building.

March 6-11, Houston, Tex.—Houston Automobile Dealers' Association's endurance run to San Antonio via Austin, and return.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

that they can raise a howl when occasion requires is evidenced by the squeal sent up by the delectable Camden Motor Club because of the manner in which Pennsylvania applied the thumb-screws. Possibly when they are applied by New York and other states, the pain will be so great and the howl so loud that the Jersey men will turn on their oppressor as he deserves to be turned on.

We respectfully submit to our esteemed contemporary, *The Automobile*, that those fascinating guesses which it has been serving up in box rules, are still lacking. While

it is highly diverting to discover how many circuits of the globe are represented by the imaginary mileage of the motorists of America, how many imaginary gallons of gasoline they used, and how far their cars would stretch if placed end to end, one, two and three abreast, such valuable statistics must remain incomplete until it is known, for instance, how many eggs could be boiled in the water the motorists used in their radiators or how many matches and how many minutes of time have been saved by the use of electric sparks instead of common lucifers for ignition purposes and the value thereof.

ST. LOUIS SHOW A SUMMER GARDEN

Smilax and a Fountain Contribute the Effect—Advertised by a Daily Parade—The Cars on View.

St. Louis's automobile show, which last year contained upwards of 90 makes of cars and was staged in the First Regiment Armory under the auspices of the St. Louis Manufacturers and Dealers' Association, is only about one-third that size and once more is housed in the Coliseum, which building, prior to last year's record breaking show, always had been plenty large enough for the purpose. The 1911 show, which was opened on Monday, 13th inst., and which will continue throughout the week, is not under association management, a committee of one from each of the firms represented forming a temporary organization under the management of which the show is held.

The interior of the Coliseum has been "done over" to resemble a summer garden, walls and ceiling alike being covered with a generous supply of smilax. The broad aisles are carpeted with green burlap, to represent grass, and a real fountain surrounded by a transplanted garden of potted plants forms the center piece. White columns surmounted by glowing electric lights mark the boundaries of the spaces. A feature of the show is a parade, consisting of at least one of each of the varieties of cars represented in the exhibition, which daily wends its way through the business streets.

Gasolene and electric pleasure cars occupy the principal place on the floor, while 13 brands of trucks and nine accessory exhibitors are relegated to the comparative obscurity of other parts of the building. With the exception of three makes of pleasure cars, the Empire "20," the Victor and the Reyburn and two makes of trucks, the Erving and the Wilcox, all the cars on view were seen at one or the other of the national shows. The exhibitors of cars and the brands they show are as follows: Beguelin-Buschart Motor Car Co., Selden; L. J. Bergdoll Motor Co., Bergdoll; Geo. C. Brinkman, Reyburn pleasure cars and Wilcox trucks; J. I. Case Threshing Machine Co., Case; Cook Motor Vehicle Co., Firestone-Columbus, Krit and Columbus electrics; Grand Motor Car Co., Regal; Gray Motor Car Co., Kline; Hall Automobile Co., Jackson; Haynes Automobile Co., Haynes and Cole "30"; Kardell Motor Car Co., Reo, Fal and Michigan, and Van Dyke and Gramm trucks; Kisselkar Agency, Kissel pleasure and commercial cars; Lane-Lynch Motor Car Co., Owen; Mound City Buggy Co., Halladay; Overland Motor Car Co., Overland; Pope-Hartford Motor Car Co., Pope-Hartford; Priesmeyer-Stevens Stevens Auto Co., Waverley pleasure and

commercial electrics; Rex Auto Co., Auburn, Westcott and Empire "20" pleasure cars and Atterbury trucks; Smith Auto & Battery Co., Ohio electrics; St. Louis Stearns Co., Stearns; Southern Auto & Machinery Co., Ohio (gasolene); Chas. F. Swartz, Chadwick and Velie; Van Cleave Motor Car Co., Speedwell; Victor Motor Car Co., Victor; White Garage Co., White gasolene and steam cars and White trucks; Whitman Motor Car Co., Mercer and Van pleasure cars and Federal trucks; John Deere Plow Co., Jackson trucks; Corby Supply Co., Little Giant trucks; Ideal Commercial Car Co., Ideal trucks; Erving Auto Repair Co., Erving trucks.

The list of accessory exhibitors is as follows: Conant & Donelson Co., Conway, Mass.; Pope-Hartford Motor Car Co. (accessory department); the Franklin Co., St. Louis; Giralding & Stevens, St. Louis; Hudson Motor & Cycle Co., East St. Louis; Illmo Motor Mdse. Co., St. Louis; Missouri Auto Directory & Guide, St. Louis; Vehicle Top & Supply Co., St. Louis; Wilson & Wieman, St. Louis.

Two Buildings for Worcester Show.

Housed in two buildings, the Auditorium and the Franklin Square garage, the first annual show of the Worcester (Mass.) Automobile Dealers' Association, which was opened on Tuesday, 7th inst., closed a successful run Saturday night last. Decked with flags and bunting, and boasting an Italian pergola, the Auditorium held the larger display of the two buildings, a number of accessory exhibitors occupying space in addition to the cars shown in this building. Among those who exhibited cars were the following: J. S. Harrington, Chalmers-Detroit and Thomas; Macker Tyler Co., Winton, Stanley steamer, Overland and White; Lemont Motor Co., Elmore; Franklin Square Garage, Maxwell and Rambler; Harry J. Murch, Cadillac; Leroy Leighton, Hudson and Franklin; Buxton Machine Co., Garford; Dawson Machine Co., Mitchell; Palace Auto Station, Brush and Stoddard-Dayton.

Mexican Show Has Oldfield Flavor.

The first automobile show to be held in Latin America was opened on Saturday, 11th inst., and will run until the following Sunday in Mexico City, Mex. It is staged in the "Edificio de la cigarrera Mexicana" and covers "fully" 14,500 square feet. While 14 makes of cars are exhibited, in addition to a number of exhibits of accessories and motorcycles, the affair is not strictly an automobile show but is more on the order of a county fair, the remainder of the 75 exhibits comprising various industrial and manufactured articles foreign to the automobile industry—which is probably due to the fact that it was promoted by "Senor" Leslie A. Henry, of Los Angeles, who is part of the Barney Oldfield-Jim Jeffries coin collecting expedition.

STARS AND STRIPES AT CAPITOL

Decorative Scheme of Washington Show—Forty-three Exhibitors Display Their Wares to Advantage.

Befitting the national capital, the stars and stripes occupy a prominent place in the decorative scheme in Convention Hall, where, on Monday night, 13th inst., the seventh automobile show to be held in the District of Columbia was opened in Washington. An abundance of colored bunting also is used in the decorations and the big amphitheater is made almost as light as day by thousands of incandescent lights. Blue and gold placards designate the different exhibits.

Of the 43 exhibitors who occupy space, 30 display an aggregate of 55 makes of gasolene and electric pleasure cars, the remaining 14 exhibits comprising supplies, tires and motorcycles. Exhibited by the Motor Sales Co., and built by the G. J. G. Motor Car Co., White Plains, N. Y., the G. J. G. is the only car of the 55 which has not heretofore been shown at a 1911 show. Equipped with an "L" head motor with four water cooled cylinders $4\frac{3}{4} \times 5$, the car is supplied in a variety of body styles ranging from a two passenger roadster to a seven passenger touring car. Three speed selective transmission is used and ignition is by jump spark generated by magneto and battery.

Probably twice as many visitors as last year flocked to the show on opening night, and when the doors are closed on Saturday night next the Washington Automobile Dealers' Association, under whose auspices the show is being held, expects to have seen established a new high water mark in attendance. Following is a list of car exhibitors and the cars they have on view:

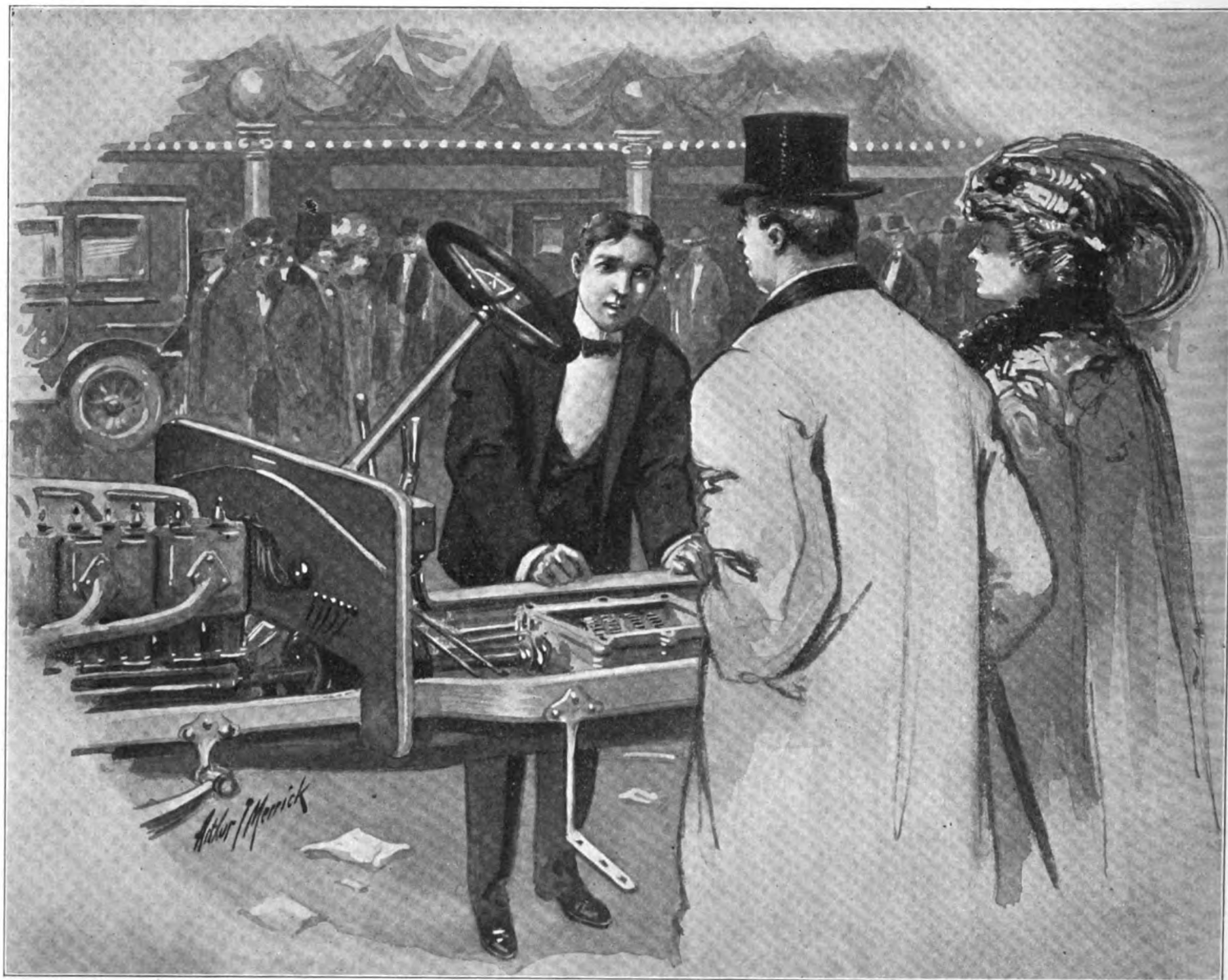
George W. Wells, Cutting; Reo Motor Co., Reo; Terminal Taxicab Co., Woods electrics; The Wilson Co., Cole and Amplex; Hinds Auto Co., Lion and Schacht; Barnard Auto Co., Stoddard-Dayton and Stoddard "20"; Rambler Auto Co., Rambler; Stiles Co., McIntyre; Wine & Benson, Moline; Miller Bros., Ford, Velie and Owen; Overland Washington Co., Overland; M. T. Pollock, Oldsmobile; Commercial Auto & Supply Co., Studebaker, Flanders and E-M-F; United Motors Washington Co., Maxwell, Columbia (gasolene) and Columbia electrics; Cook & Stoddard, Pierce-Arrow, Cadillac and Baker electrics; Luttrell Co., Packard; Zell Motor Car Co., Hupmobile, Chalmers-Detroit, Peerless and Stevens-Duryea; Pope Auto Co., Everitt, Matheson, Pope-Hartford, Oakland and Columbus electrics; Carter Motor Car Corporation, Washington; Motor Sales Co., Moon and G-J-G; Emerson & Orme, Re-

gal, Apperson and Detroit electrics; Buick Motor Co., Buick; D. S. Hendrick, Thomas, Inter-State and Franklin; Locomobile Co. of America, Locomobile; Selby Co., Paige-Detroit; Imperial Motor Co., White and

much has been said and written, was epitomized in the scarceness of British-made cars seen at the recent Brussels (Belgium) show, due, possibly, to the short space of time between this exhibition and

Attention centered around those makes of cars in which the "moteur sans soupapes" (valveless engine) is embodied, but little of real novelty was evident, the general trend being toward the usual types

MECHANICAL KNOWLEDGE AS DISCLOSED AT THE SHOWS.



"Sliding gears! Not for us; we want the anti-skid kind."

Rauch & Lang electrics; Bergdoll Motor Sales Co., Bergdoll; Theo. Barnes & Co., Pullman; N. F. Bowles, Warren-Detroit; J. H. Ebersole, Marion and Empire.

The accessory exhibitors are as follows: Empire Top Co., tops; R. Milton Norris, tops; Hoskins Co., speedometers; S. F. Bowser & Co., oil and gasoline tanks; National Electric Supply Co., accessories; Standard Oil Co., Polarine oil and grease; Rudolph & West Co., accessories; Century Tire Co., tires; Le Roy Mark, insurance.

Two-Engine Car Feature at Brussels.

British conservatism, about which so

the ones held at Olympia and Paris. Of the 43 makes of cars on view, John Bull was represented by but two brands, the English Daimler and the Austin, and America by one, the Ford.

The exhibition, which was housed in the Palais Cinquantenaire, as usual, was opened to the public on Saturday evening, 14th ult., and closed Wednesday, 25th. Though scarcely as large as the London and Paris shows, the Brussels exhibition was more representative than last year, and numbered among the exhibitors nearly all the better known foreign automobile manufacturers.

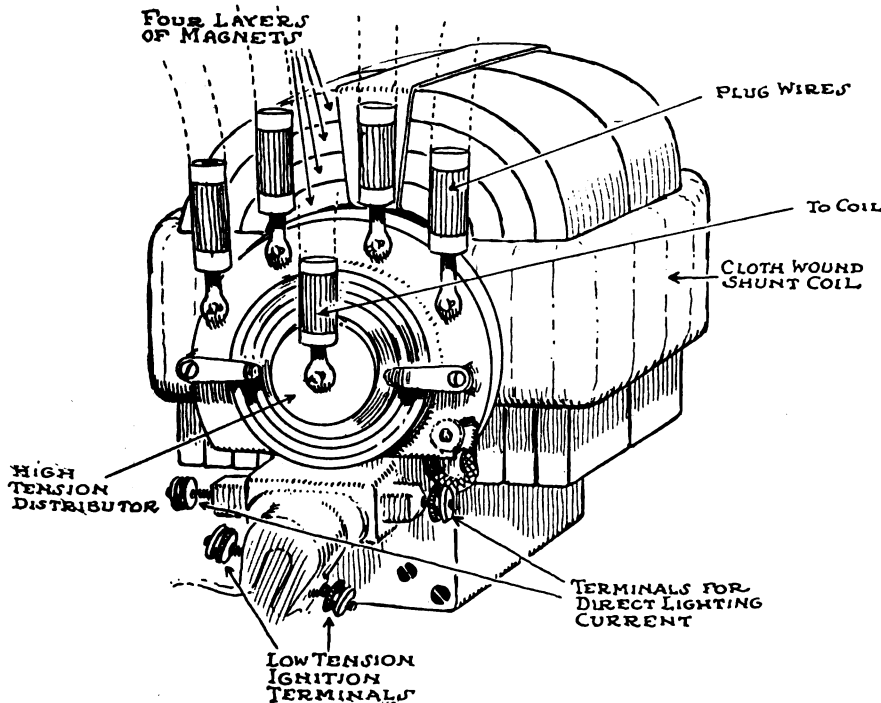
of open and closed front touring cars, runabouts and limousines.

Equipped with wire wheels and with two separate power plants, the Sperata-Delahaye really was the greatest novelty of the show, and came in for a deal of inspection and criticism. Each separate engine used in this car is a unit, and consists of two air-cooled cylinders, the two units being set transversely in the frame and the common carburettor placed in the center between the units. The final drive is by means of a long single chain to the rear axle. The car mounts but one seat, placed far back.

REMY MAGNETO "SHUNT WOUND"

New Combination Lighting and Ignition System Involves Dynamo Features—Its Automatic Action Explained.

Complete information concerning the construction of the new Remy combination lighting and ignition magneto indicates that its nature is as simple as first reports of its introduction would seem to indicate.



NEW REMY COMBINATION IGNITION AND LIGHTING MAGNETO

As was told in the Motor World's first description of the system, which was published two weeks ago, it involves nothing more complex than a specially devised magneto which is connected for ignition purposes after the manner of the true dual system. An extra set of brushes arranged to collect a portion of the primary current generated in the magneto armature serves to divert a portion of that current to the lighting system, either in feeding the lamps directly or in recharging the storage battery that is used in conjunction with the magneto both in supplying the lights when the engine is at rest and in furnishing current to the spark coil when it is desired to start the engine or when running at very low engine speeds. The ignition current is collected in the usual way.

As the first concrete and affirmative answer to the very natural question, "Why cannot an ordinary magneto be used for both ignition and illumination?" the system is of particular interest. And as such it must be considered. For while other systems of a like nature have been proposed both in this country and abroad, the Remy, which is the latest development of the Remy Electric Co., Anderson, Ind., is the first, so far as is known, to attain suffi-

cient stability to be publicly exhibited at a national automobile show.

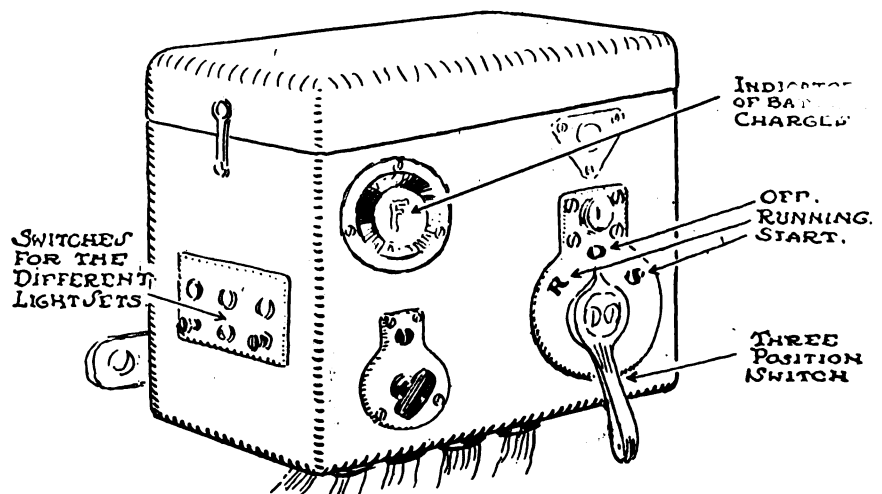
The new instrument, which visitors at Part II of the Chicago show were permitted to see for the first time last week, does not differ materially from the standard type of Remy high tension magneto that has been in use for ignition purposes for some little time. That is to say, it has the same general type of horseshoe magnets, the same type of shuttle-wound armature and the same general pattern of high tension dis-

tributor, which automatically selects the cylinders in the proper firing order and times the electrical impulses to secure the correct ignitions.

As in any true dual system, also, a storage battery is used for starting purposes. When it is desired to start the engine, either "on spark" or by cranking, the kick-switch is thrown over into the starting position, when a vibrator comes into action to cause a stream of sparks to pass across the gap of the plug that happens to be selected by the distributor as being next in the order of firing. At such times current is drawn from the battery. As soon as the engine is running properly, the starting switch is kicked over into the running position, when the vibrator is cut out of action and the primary contact is made and broken at the regular circuit-breaker on the magneto, the ignition action being essentially that of the single-spark system.

Thereafter primary current for the ignition system is supplied either by the magneto or battery according to circumstances. Ordinarily the magneto furnishes the current. If the engine is throttled to very low speeds, however, so that the primary current generated by the armature is comparatively small, the battery automatically affords the supply. The interchange between the magneto and battery is accomplished automatically; the design of the magneto being such that its voltage remains sufficiently high, even at very low engine speeds, to prevent the battery from discharging through the armature. As soon as the speed of the engine is increased beyond the minimum, which corresponds to a car speed of about ten miles an hour, the armature current becomes strong enough to supply the ignition system and the battery no longer is drawn upon. As

tributor mounted on the front end of the instrument. There is also a single synchronous coil, mounted in a box on the



COIL BOX FOR NEW REMY COMBINATION SYSTEM

dash, which is used to transform the primary current generated in the armature; the latter being led from the armature to the primary side of the coil, while the secondary is led from the secondary, or high tension side of the coil, back to the dis-

tributor, which automatically selects the cylinders in the proper firing order and times the electrical impulses to secure the correct ignitions.

Save that the same armature, magnets and battery are used for both purposes, the lighting side of the system may be con-

sidered independent of the ignition. A separate commutator is employed which is incapable of being rocked to vary the timing of the primary current, such as is required for ignition purposes. Within the coil box, which is no larger than the ordinary four-unit spark coil, is mounted the starting switch for controlling the ignition current and also the push button switches for controlling the side, tail and headlights. There also is an indicator which shows the charging requirements of the battery. The latter consists of a simple solenoid telltale which is put into action whenever a special indicator button is depressed. A pointer, rising and falling between two limit marks shows whether the battery is discharged or partially or fully charged, a switch on the face of the coil box enabling the operator to regulate the charging operation.

The essential differences between the combination magneto and the ordinary instrument, which the accompanying illustrations plainly show, are that it is built with a stronger magnetic field and that the field is compensated, so to speak, in such a way as to cause the energy output of the instrument to be practically constant at all speeds above that corresponding to a car speed of ten miles an hour.

To this end the magnets are built up in four overlapping layers, instead of two, as more frequently is the case, while a shunt-wound coil is wrapped around the magnets. The effect of the coil is to cause the magneto output to be held practically constant at eight amperes and at a pressure of six volts regardless of the speed of the armature. With the exception of the extra strong magnets and the shunt coil, practically the only difference between the combination magneto and the standard high tension type is that both a commutator and a circuit-breaker are employed, as already explained; one being used for the lighting and battery charging current and the other for ignition.

As was explained in connection with the first published description of the system, the instrument is but little larger and practically no heavier than the standard Remy magneto and is made with a combination base. By this means it is rendered suitable for attachment to practically any standard magneto bracket so that the system complete may be installed on almost any car to replace the present ignition system.

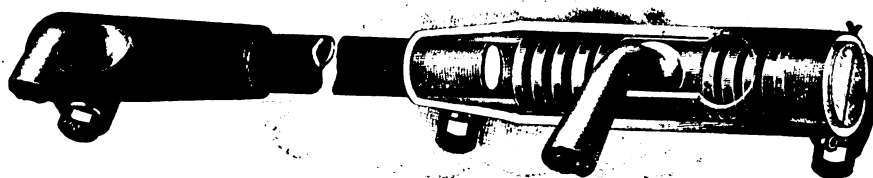
"Breathing" that Causes Metal to Rust.

Through a sort of respiration which affects cylinders, gear boxes, clutches, inter-spaces in ball bearings and other parts of an automobile, or any machinery, every piece is in danger of internal rusting, according to Mervyn O'Gorman, the well-known British engineer. Every closed space, he says, "breathes" by drawing in air when a fall of temperature contracts its walls, and expanding it when the walls expand through heat. The moisture intro-

duced with the air is deposited in the cavities, and may produce serious damage through rust. The popular belief that oil will protect the inaccessible parts of unused machinery is fallacious, since nearly all oils take up about 3 per cent. of water in solution.

Improved Fore and Aft Connection.

It is decidedly well worth while paying a great deal of attention to the design and construction of the steering connections—so much so, in fact, that many automobile makers long ago gave over the attempt to construct such important parts themselves and relegated the task to specialists. One of the connection systems that has enjoyed considerable usage at the hands of manufacturers of the better class is that produced by The Billings & Spencer Co., Hartford, Conn. The "B & S" connections are made with divided sliding sockets, double buffer springs and plugs in the



BILLINGS & SPENCER IMPROVED FORE AND AFT CONNECTION

end of the case that are protected with special locking devices.

The new fore and aft connection, which recently has been produced and which is intended for use between the steering rocker arm and the steering knuckle, is provided with an improved type of joint, however, in which the case, or outer tube, is not weakened by a slot extending clear through to the end. Instead, as the accompanying illustration shows, the slot is enlarged at one end to sufficient diameter to admit the ball on the end of the rocker arm, the remainder of the slot being of just sufficient width to allow free play for the neck of the arm above the ball, when the latter is properly assembled in the joint. The inner end of the case is threaded on the tube and secured by a pinch-bolt. The outer plug, which likewise is threaded in the case, and which is removable for assembling purposes, is safeguarded by a pinch-bolt and also by a cotter pin.

"Rogers' Unika" Bobs Up in Kansas.

L. L. Rogers and his "Unika" spring wheel have turned up in Kansas, which is a long way from Boston, Mass., where in October last Rogers employed half-page advertisements in the daily papers to tell the thrifty New Englanders how to make fortunes by purchasing stock in the Rogers Unika Wheel Co., Inc., at half its par value of \$10 per share. At that time Rogers announced that he could get "hundreds of

thousands from capitalists, any day, any hour," but he spurned capitalistic coin; he preferred the public's money. As New England did not respond to his touch, he went to Detroit, where he did some more advertising. But the Michigan people also were shy about making fortunes so easily, and it was not until last week that he again was heard from. He first appeared in Hutchison, Kans., where he unfolded his Unika fortune-maker, but Hutchison closed its eyes to the opportunity, and he passed on to Pratt, which is only a short distance from Hutchison. There, assisted by a Dr. C. F. Underhill, of Detroit, he apparently at last found willing ears and open purses. At any rate, the Detroit doctor has announced that the people of Pratt have subscribed \$50,000; that a company will be organized, and a plant established in the Kansas town, all of which may come to pass and cause the poor old pneumatic tire, which for many years has been pur-

sued by all manner of spring wheels, spring hubs and spring tires to "blow up" for good and all.

Book that Replaces a Catalog.

Not everyone is privileged to make a tour through one of the modern automobile factories under the leadership of a competent and informing guide, and for such as are possessors of the new "Locomobile Book," such a factory visit is not necessary in order to gain a concrete idea of how a modern car is constructed or how it is assembled. The new publication of the Locomobile Co. of America, Bridgeport, Conn., is more than an ordinary catalog. Its separate chapters are devoted to descriptions of the factory, the organization, the essentials of the two Locomobile models which are discussed in detail with the aid of line cuts showing the parts in process of assemblage, and also such notable Locomobile performances as the globe-girdling tour of Mrs. Harriet Clark Fisher, of Eagle anvil fame. The work is composed of 250-odd pages of text, interspersed with fine half-tone plates, and is printed on heavy deckle-edge book paper. To the elect it is presented in board covers, but there also is a standard edition bound in heavily embossed paper. While published in the name of the advertising department of the Locomobile Co., the carefully prepared and convincing text betrays the unassuming hand of John A. Kingman, who is advertising manager.

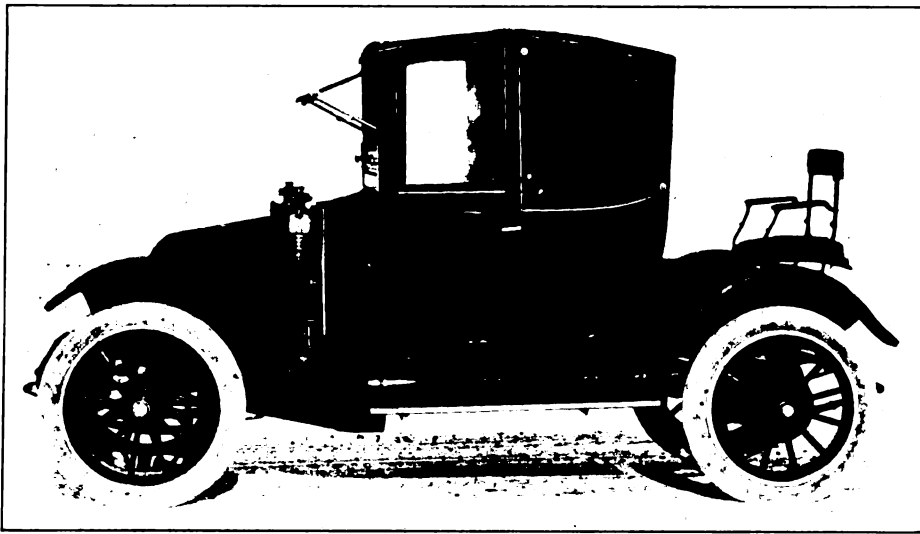
CAR FOR USE IN ANY WEATHER

Franklin Develops a Combination Runabout and Landaulet—How Wide Range of Convertibility is Obtained.

Seeking to develop an all-weather car that will be equally comfortable at different seasons of the year, the H. H. Franklin Manufacturing Co., Syracuse, N. Y., has produced a type that is descriptively termed a combination runabout and landaulet. As its name implies, it is of the enclosed variety, but embodying a new solution of that exceedingly difficult problem, the convertible body. In general form and appearance

for the chauffeur or to carry an extra passenger. The vehicle thus is really of three-passenger capacity although the top affords protection for only two. The general design is neat and shapely, the French type of hood and dash enclosure being parallel, while the mud guards and running boards are fully enclosed by weather panels on the body side, thus giving a comfortable and serviceable appearance to the vehicle as a whole.

The power plant is the standard, four-cylinder, 25 horsepower Franklin air-cooled engine and sliding gear transmission. The full elliptic spring construction, which is one of the Franklin characteristics, is employed as a matter of course, the suspension of the lower halves of the springs



THE NEW FRANKLIN COMBINATION RUNABOUT-LANDAULET

it partakes of the nature of a single landaulet, the rear portion of the top being of leather and the forward part being entirely glazed. When the top is lowered, however, it becomes a true high-sided runabout, the roof entirely disappearing with the top, while the drop wells in the sides, into which the windows are slid, are closed by metallic caps which exclude the dirt and dust.

The vehicle, being designed mainly for runabout or town car service, is equipped with left-hand drive. But as the control levers are mounted in the center of the footboard, access may be obtained from either side with equal facility. The horn, which is mounted in front of the dash and under the hood, is operated from the steering column, while the gasoline pump is mounted just in front of the seat at the driver's right hand. The interior is roomy, nicely upholstered, and ventilated by means of an air-space beneath the moving panel of the front window, which, when the top is collapsed, serves the purpose of a windshield.

The rear deck, which slopes back from the seat and is nearly level, conceals a folding rumble seat, which may be used either

from the under side of the axles enabling the body to be set considerably lower than would be possible were the springs mounted over the axles, in the more common manner. A car of this type, very attractively finished, was exhibited in the lobby of one of the New York hotels the first week of the recent show in Madison Square Garden.

Chief Will Employ Eight-Cylinder Engine.

The Chief Motor Car Co., which recently was organized in Detroit, will manufacture a "convertible" car employing an eight-cylinder, V-shaped engine. The convertibility of the vehicle will consist of a removable body that will permit of a ready exchange of a tonneau for a delivery body or vice versa.

Motor Buggies to Be Made in Tennessee.

Preparations are nearly complete for the establishment of an automobile factory at Tullahoma, Tenn., which is to be ready for occupancy in the latter part of this month. It will be conducted under the firm style of Sherrill & Smith, and will turn out chiefly small runabouts and high-wheel motor buggies.

MORE ABOUT "SOLID GASOLENE"

Experiments With It Serve to Bring Out Some of Its Properties—Special Carburettor Required for Its Use.

That automobiles shortly will be run on a form of fuel condensed to practically a solid state, and thereby rendered free from the dangers that attach to the storage and handling of ordinary gasoline, now appears even less probable than it did last December, when reports of the discovery of a new form of "solidified petrol" first were cabled to this country. Although the invention of the solidifying process is credited to a Roumanian inventor, practically all the interest that the discovery has aroused has centered in England, where the new fuel has been subjected to a long series of tests. It is perhaps worth adding that the reports of these experiments have been subjected to a heckling such as only the British trade prints would countenance, the discussion of the respective merits of fuel treated by the new process, indeed, still being in progress.

Although the nature of the solidifying process at first was shrouded in mystery, it now appears that the general scheme is not absolutely revolutionary in the field of chemistry. According to one of the commentators on the subject, "A solution of stearic acid in petrol (the English equivalent of gasoline) is first prepared, and to this is added an alcoholic solution of caustic soda, giving a lively reaction in the formation of sodium stearate, or ordinary soap dissolved in petrol and alcohol. The sodium stearate is precipitated in the colloidal, or jelly state, by the addition of water, thus locking the petrol within its interstices." This, in substance, is a summary of the process as described by the original investigator.

The appearance and general properties of fuel treated in this way may be described as follows: The jelly itself is of an opaque color and has an aroma like that of the petrol. When it is handled it seems to liquify wherever touched, due partly to the heat of the hand and partly to the pressure of the fingers. However, it is still capable of evaporation at ordinary temperatures, even though at a slower rate than when in liquid form.

From the tests made with this fuel it has been evident that the specific gravity throughout the mass is variable as the mass itself is not at all homogeneous. According to the external prevailing conditions, the specific gravity ranges from .810 to .937. "Evaporation of the exposed surface is not very rapid, owing to the smallness of its surface to volume ratio," says one of the experts who adds that "a cube of 27 grammes weight only lost 44.8 per

cent. of its original weight during exposure to the air in the laboratory for 3¼ hours." It burns much in the manner of a piece of wood, the heat simply causing vapor to be given off slowly, and this vapor being immediately consumed.

In order to utilize the fuel for test purposes a long iron box was provided, constructed with a series of pipes in its lower portion, through which the exhaust gas from the engine passed. Over these pipes was a plate forming the bottom of the compartment into which the solid petrol was placed. The compartment was 28 inches long by 7 inches wide and of the same height, but the petrol was not placed directly on the bottom of the box, but on a false bottom of wire screen, raised from the true bottom about two inches. The mesh was about three-quarters of an inch square, and, owing to its own weight and the slight pressure of the cover, the petrol was extruded through the screen in stalactite form. The wooden cover which formed the top of the box was perforated with two one-inch holes. Carburation was effected by the air being drawn over the heated base chamber of the air inlet at one end of the box, and through the space between the base of the fuel box proper and the false bottom formed by the wire mesh. The air impinging upon the extruding petrol then passed through gauze screens into a mixing box fitted with extra air openings, and thence to the branched intake pipe of the motor. But a very small quantity of additional air was required, and when a working temperature of the base of the carburating box was reached, no further adjustment of air was needed.

In the comparative tests made by a British expert, with solidified petrol, two trials were made. The specific gravity in each instance was .764 for the solid and .720 for the liquid fuel. The motor showed 10 brake horsepower at 1,428 revolutions whether running on solid or liquid fuel in the first test, and the consumption per brake horsepower hour of solid fuel was 426 grammes, as against 519 grammes of liquid fuel. In the second test the motor developed 12.2 horsepower at 1,050 revolutions, running on either solid or liquid fuel, and the consumption per brake horsepower hour was 312 grammes of solid and 380 grammes of liquid fuel. In comparing the weights of the solid and liquid fuels, the ratio of weight of the solid to the liquid in the first tests gives a value of 83.5 per cent., that is, for equal work done, only 83.5 per cent. of the weight of solid fuel is used as compared with the weight of the liquid fuel.

As petrol ordinarily is dealt with by volume instead of weight, the volumetric comparison is therefore more interesting. In regard to the volume, the tests showed, when solid petrol was used, a saving of between 21 and 22.6 per cent., or that it would require about 22 per cent. more tankage

for enough liquid fuel to accomplish the same amount of work.

While the solidifying of petrol or gasoline thus is demonstrated to be entirely practicable, the real utility of the process remains to be proved. And in this connection it may be observed that the criticisms which the attempted introduction of the process has invoked in England have brought out one or two salient objections which, as yet, are unanswered. It is pointed out, for example, that the use of solidified petrol entails slightly increased complication in manufacture; that an entirely new form of carburetter is necessary to handle it; and that there is nothing in the process itself which in any way can serve to increase the efficiency either of the fuel or the engine using it. Whether, in the face of these objections, the greater safety in storage and handling, which is claimed for solidified petrol, will prove sufficient to ensure a market for it remains to be seen.

Bent Rims as Causes of Blow-outs.

Though rim-cutting is not now so prevalent as it was before the idiosyncrasies of tires became better understood, the trouble still obtains in some cases, and often is misunderstood, and the resultant blow-out attributed to other causes. Rims only slightly bent, through riding over extremely rough road or through deep ruts, will cause a species of rim cut varying from a mere bruise to an actual severing of the rubber and fabric, and the cause of the injury to the tire often is overlooked. Generally, the oversight on the part of the owner or driver is due to his idea that other things, apparently well defined, are responsible, but in some cases, the true cause, i. e., a bent rim, is overlooked because the wheel is revolved either during or after the removal of the tire. Therefore, it is well to examine the rims occasionally, and if dents are found—no matter how small they are—they at once should be hammered out.

When Carburetters May Cause Knocks.

When either by readjustment or the fitting of a new carburetter an owner sets about to effect an improvement in the running of an engine, a great many unexpected things may happen. If the old carburetter provided too rich a mixture at all speeds, the new one very likely will cause the motor to knock badly at all speeds, but if the old one gave too rich a mixture at low speeds only, no change of the ignition timing may be necessary, as no knock will occur except, perhaps, at very low speeds, when the ignition can be sufficiently retarded to overcome the trouble. Carburetters are more satisfactory if they provide richer mixtures for starting and very slow running.

The knocking, which occurs when the carburation is improved, is due to the fact that an undue rich mixture is slow in burn-

ing, and as a result the ignition necessarily must be more advanced than under the condition where the mixture is correct.

As it is not natural to look for faulty timing of the ignition as the cause of the trouble after readjusting or fitting a new carburetter, the motorist will search in almost every other direction, assuming that if the timing were correct before the change and has not been altered, it cannot be the cause of the knock.

"Ticklers" That Cause Leaks in Radiators.

To assist in easy starting many carburetters are fitted with "ticklers" from which a wire is run through one of the air spaces in the radiator where it terminates in a small ball or loop. Unless this wire is very light, or the space through which it passes is reinforced, a leak at this place in the radiator is likely to occur. If the "tickler" cannot be dispensed with, the hole should be reinforced or the wire replaced with a piece of strong cord having somewhere in its length a piece of elastic material to hold the ball or loop firmly against the radiator and prevent its rattling and the resultant leak.

To Preserve Spare Tires and Tubes.

Tire covers, preferably of dark colored material, always should be provided for spare tires, as bright sunlight is deleterious to rubber. Spare tubes should be carried in a cloth bag made for the purpose, and not carried loosely in the tool box where tools can chafe them or oil get on them. Being, to a certain extent, a solvent of rubber, oil should not be permitted to get on either tires or tubes. When packing spare tubes for conveyance, it is a wise precaution to wrap the valve stems in cloth to preclude the possibility of their injuring the tubes.

Simple Means of Locating Noises.

A knock or an unusual noise in an engine often may be traced by placing the ear against the steering wheel, the hood or one of the mud guards. If this method fails, and in the absence of a better "sounding board," a substantial piece of scantling used in the way in which a doctor uses a stethoscope usually will locate the trouble.

Advantage of Wire Armored Hose.

Wire armored rubber hose should be substituted for metal pipes whenever the latter are the cause of trouble. The joints are better made by binding them with copper wire, or clips which easily can be obtained for the purpose. Obviously, the rubber hose is not strained by vibration and strains the unions but little.

Because they add not only to comfort but to the appearance of the car, wool-bordered cocoanut mats are often used on the floors of cars. They also deaden the noise made by the transmission.

Systems of Suspending the Power Plant

Though the term "three point suspension" or "three point support," which is perhaps the better expression, almost is self-elucidating, and the majority of motorists know that it means exactly what it seems to mean, viz., that the motor or the transmission, or both, either as a unit or separately, are supported at only three points on the frame, there are compara-

stool rests. The same experiment tried with the three legged stool results in the failure to slide the paper under either of the legs, because regardless of the unevenness of the surface upon which the stool rests, up to that point where it will not stand at all, the three legs support an equal amount of weight as the points of contact between the legs and the object on which

in the same way, four bolts serving to attach each firmly to the frame. Owing to inequalities in the road surface, a certain amount of weaving took place in the frame and was communicated directly to the engine and transmission, the result being a bent frame or a broken engine casing, and in either case bearings were thrown out of line and excessive wear took place.

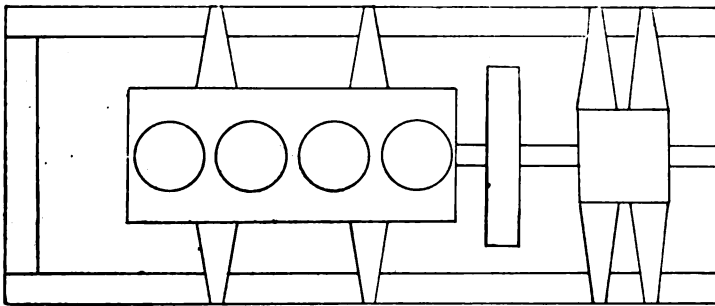


Fig. 1

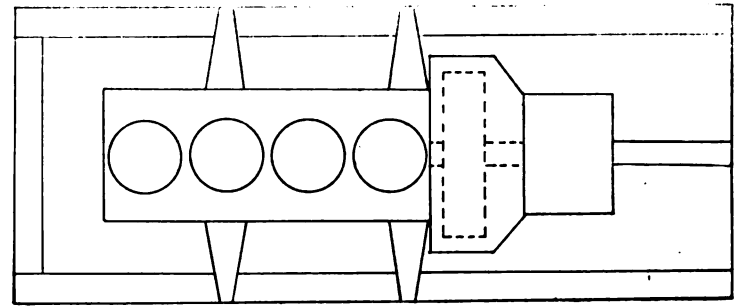


Fig. 2

tively few who thoroughly understand the principle and effect of this type of construction. Far from being new, the principle has been in use in other branches of engineering endeavor for a great many years, perhaps the most familiar example being the tripods upon which leveling instruments and cameras are mounted, three legs being used because with this number a firm bearing for the instrument is gained regardless of the inequalities of the surface upon which they rest.

A better example is the one of the three and four legged stools, the former repre-

they rest remain always in the same plane.

If the experiment be carried further, and the four legged stool placed on the floor with one of its legs resting on a block of wood about one-quarter of an inch in thickness, the theory of three point support at once becomes apparent. But three of the legs support the weight, which if increased, will result in a distortion of the stool brought about through the unevenness of the supporting surface. If the three legged stool be substituted for the other, in the same experiment, no distortion will take place.

Had the designers been dealing with a heavy type of stationary engine the solution of the problem would have been simple and merely would have involved the strengthening of the frame until perfect rigidity was secured. But whereas the stationary engine rests on a solid bed, the automobile engine rests on an entirely different foundation on which irregularities of road surface, spring action and turning stresses all have a disturbing influence. As the elimination of weight is of prime importance in the building of automobiles, perfect rigidity, possible only by the use a

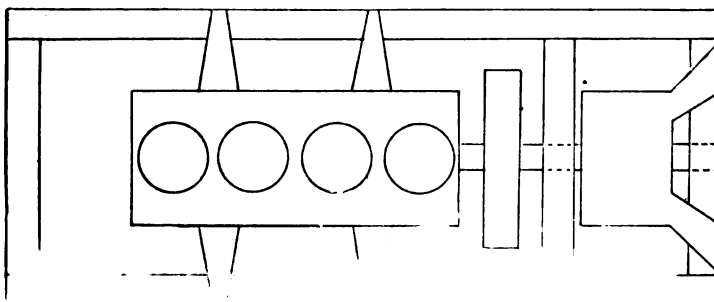


Fig. 3

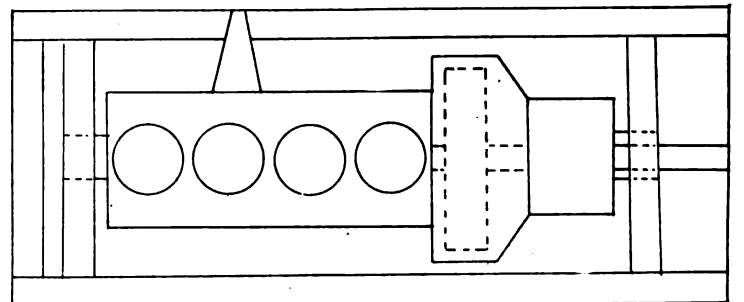


Fig. 4

senting three point support and the later four point support. If the four legged stool be placed on a supposedly flat surface all the legs will not support the same amount of weight, this being proven by the fact that it is possible to slide a sheet of paper under only one of the legs. Under the other three legs it is impossible to slide the paper because they support the greatest part of the weight owing to the inequalities of the surface upon which the

With but slight modifications, the problem illustrated by the four legged stool was the one with which designers had to contend in the mounting of automobile engines. The engines in the automobiles turned out by the first builders were supported at four or more points, the preference being given to that form of construction in which two points of support were used on each side of the engine. In many cases the transmission also was mounted

great weight of relatively poor material was out of the question at first, though at present, added designing experience and the use of greatly superior materials have so far bettered conditions that four point support is used extensively and numbers among its exponents some of the foremost builders of this and foreign countries.

An example of this style of construction is illustrated by Fig. 1 and is embodied in such well-known cars as the American,

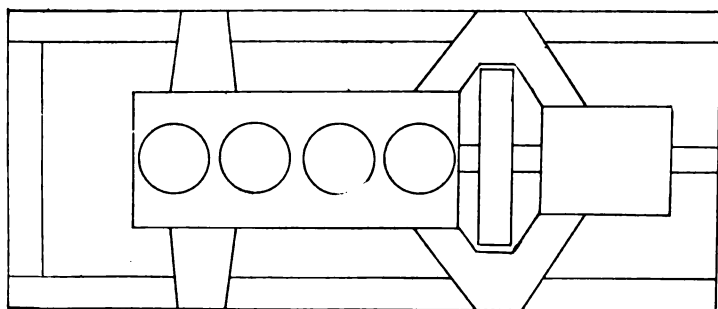


Fig. 5

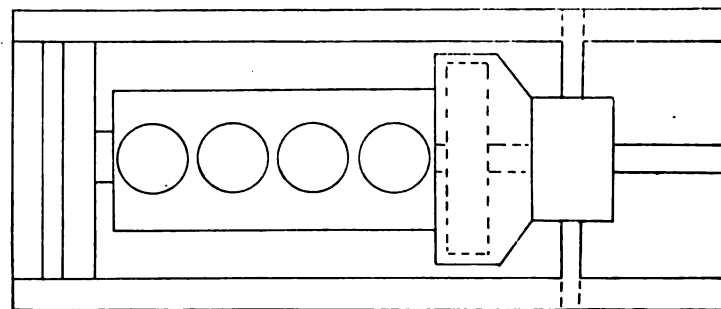


Fig. 6

Oldsmobile, Garford, Speedwell and a number of others. Here both engine and transmission are mounted at four points in separate units. Of the unit type power plants, supported on four points, as illustrated in Fig. 2, the Chalmers-Detroit, Hudson and Haynes are examples, though the latter while actually mounted at four

illustrated in Fig. 8, which is typical of the Inter-State car. In this design the transmission alone is carried on four points, the engine being mounted on three, the third of which is carried in a bearing on a raised cross frame member in front of the engine.

Of the unit construction three point supported power plants, the arrangement

point it also carries the steering apparatus. In other systems the power plant is mounted on four points and carried in a sub-frame which, in turn, is supported at three points on the main frame of the car.

The elimination of wear to the minimum is one of the prime requisites of automobile construction. Wear is directly due to friction, the reduction of which devolves first upon correct design and second upon lubrication. It is evident that a misalignment of engine or transmission bearings will result in improper lubrication, the natural result being excessive wear. Three point support maintains engine and transmission bearings in perfect alignment whether the frame becomes slightly distorted or not. The theory of this construction has been made plain. In practice, the engine or the transmission or both, as the case may be, should be, and in the majority of cases are, bearings of one type or another. Thus it will be seen that when one wheel of the automobile passes over an obstruction the frame may weave without disturbing the alignment of bearings, as the engine as a whole merely moves slightly in its supports and is automatically accommodated to any distortion which may occur.

By the use of three point support, builders attain their object—the positive maintenance of the relative position of engine and transmission components—in just the

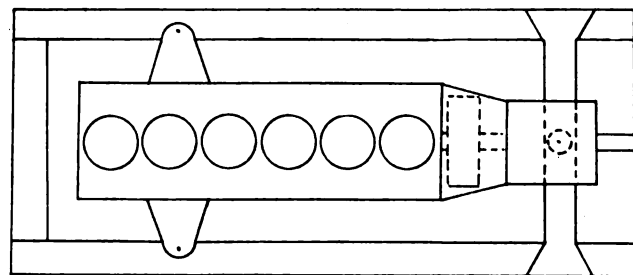
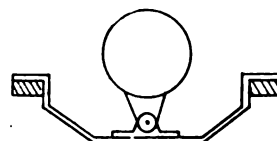


Fig. 7



points, retains many of the features of three point support. This method is illustrated in Fig. 5 and has the two rear supports firmly bolted to the frame, but the forward supports are mounted on springs to allow of a certain amount of movement of the power plant. Another type of four point support is that in which the engine is mounted on four points and the transmission is carried on the rear axle. The conventional four point supported engine is shown in Fig. 3, the transmission alone being mounted on three points, all of which are on cross members in the frame. Although this mounting is not extensively used in pleasure cars, a similar arrangement is common in the heavier types of chain driven commercial cars, in which the cross shaft carrying the driving sprockets serves for the rear supports, the front of the transmission being carried on a cross member in the frame.

Those builders who discarded the four point support system adopted three point support, each builder's arrangement taking the form which in his judgment was the best, the result being a number of mountings all hinging on the same principle. The methods of applying three point support are without number and a few of the systems adopted for use in some of the better known cars will serve to help make plain this type of construction. Some builders adopted the unit type power plant and others clung to the older method of mounting engine and transmission separately, as

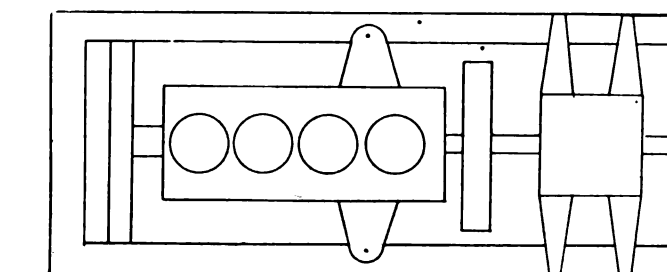
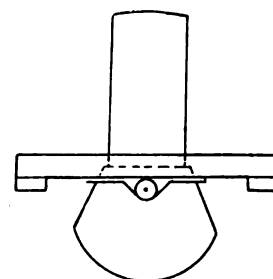


Fig. 8



two rear supports carried in trunnion bearings.

Fig. 4 represents a unique style of three point support in which the unit power plant is supported at each end in bearings mounted on cross frame members, the third point being an aluminum arm attached to the crankcase of the engine and to the frame. It is employed in the Lion chassis and in addition to serving the purpose of the third

opposite way in which it is effected by the other school of designers. The former allow for weaving. The latter, convinced of the practicability of rigid frames possible by the use of the present day high grade metals, the employment of which does not necessarily increase weight to a prohibitive degree, use four point support in the belief that the ultimate result in either case is the same.

GEORGE IS DOING IT, ALL RIGHT

**Maryland Official Arouses Uncle Sam and
Further Federal License Law—Hold-
Ups of Diplomats Bring Climax.**

If John E. George, Maryland's commissioner of motor vehicles, had set out deliberately to work for a federal licensing system of all automobiles running on the roads of this country, he could not have gone about it in a more effective way than he has done during the past few weeks.

In addition to his flamboyant demand that the president of the United States "pay up," members of congress, federal cabinet officers, senators and other high dignitaries residing in the hundred square miles of the District of Columbia have been held up, arrested, subjected to searching inquiries time and again, until their very souls rebelled against the treatment and they were looking around for some remedy. Still further to hasten the ultimate federal registration of motor cars, Commissioner George proceeded to "gather in" all the stray diplomats who, in the security from arrest which international courtesy bestows upon members of the diplomatic corps, essayed to tour upon the roads of the Terrapin State without obtaining license tags. Naturally the ambassadors and plenipotentiaries vigorously objected to the indignities heaped upon them by a "friendly nation"—that is to say some rural marshals and wayside sheriffs belonging to said nation—and the worried Department of State is seeking a way out of the difficulty.

According to international practice, no diplomat can be arrested for a violation of any of the laws, state or national, during the time he is an accredited representative of a foreign nation, nor can he be compelled to pay for an automobile license tag, or other permission to use the roads of a "friendly nation." The automobile commissioner of Maryland, on the other hand, says the law of his state does not permit him any choice in the matter, and he must insist upon some kind of a license tag or other identification mark to be carried by the automobiles used by the members of the diplomatic corps when traveling in Maryland, which extends reciprocity with a string to it. Ergo, the Department of State proposes to issue to the members of the diplomatic corps, cabinet and other high dignitaries, a sort of federal license tag (without cost, of course), which will allow the driver of the car bearing such a tag to do on American roads pretty much as he pleases. The color of the proposed tag is to be a flaming red, bearing in the center a white "D," visible at a considerable distance. That this action by the Department of State will prove the entering wedge to

a federal license law appears not improbable.

Child Victim of Accident Awarded \$13,000.

What probably is the heaviest amount of damage ever awarded to a mere child for an injury was given to Mary Mullen, seven years old, by a jury sitting in the Brooklyn Supreme Court, Justice Marean presiding, after a trial of several hours, on Friday, February 10th. She received an award of \$13,000. The evidence at the trial showed that on or about April 10th, 1909, Mary Mullen, then five years old, was crossing Atlantic avenue, at Hicks street, when a motor truck belonging to the Adams Express Co., ran over her, injuring her frightfully about the face. When she appeared in court last week her face was deformed, and one eye was looking through a mere slit. Before the accident she had been considered a pretty child, and photographs of her were used as evidence supporting this contention before the jury. The jury decided that the loss of her beauty and the physical pains she had endured were worth at least \$13,000.

Wherein Missouri and New Jersey Differ.

Although the point involved in a recent case of damages against an automobilist had nothing to do with the question of responsibility of the owner of the car when driven by someone else, the Court of Appeals of Missouri took occasion to embody in its opinion the following sentence:

"The owner of the car who was not present at the infliction of the injury cannot be held liable except it be shown that the person in charge not only was the agent or servant of the owner, but also was engaged at the time in the business of his service."

In this interpretation the court places itself in opposition to the New Jersey Court which recently decided that the owner was responsible for an accident caused by his son, who had taken the automobile out on the road by permission of the owner's wife.

Canal Commission "Plucks" Motor Cars.

Except on carriages duly licensed by the Republic of Panama, a monthly tax has been levied by the Isthmian Canal Commission on vehicles traversing the roads in the Canal Zone, of which there are not enough to brag about. Horse-drawn public carriages are taxed \$1.25; two-wheeled vehicles, \$2.50, and four-wheeled vehicles, \$5. Pleasure motor vehicles, however, are "plucked" just like they are at home, being taxed \$25, while motor cars carrying freight or passengers for hire are taxed \$150 per annum. Each vehicle also must carry a number, for which \$1 is charged.

Motorists in Elkton, Kent county, Md., have organized an automobile club and elected the following officers: President, W. Frank Jarrell; secretary, James G. Beck; treasurer, Claude Parks.

STATISTICS FROM THE BAY STATE

**Highway Commission Presents Interesting
and Instructive Figures—Accidents and
Arrests and Their Causes.**

During the past year there were 1,182 accidents in the State of Massachusetts in which automobiles were concerned, which is an increase of only 52 over the previous year. However, there was a 50 per cent. increase in fatal accidents, there being 77 persons fatally injured in 1910, against 54 in 1909.

This is brought out in the always interesting and instructive report of the Massachusetts Highway Commission, which also shows that about 35 per cent. of those killed were the motorists themselves. Although pedestrians are the cause of many of these accidents, it is the practice to punish the drivers. To the carelessness of people in stepping directly in front of machines without taking the precaution to see if one was approaching, many of the accidents are due. In the country the accidents diminished from 314 in 1909 to 222 in 1910, but in the cities they increased from 816 to 960.

The commission is required by law to investigate fatal accidents and may investigate any others where such action seems advisable; in addition, city and town police authorities are required to report the particulars of all serious motor vehicle accidents that occur within their jurisdiction. Thus the commission has had before it a mass of data relating to the accidents that have happened in which motor vehicles were concerned, and from this great quantity of evidence it has reached the conclusion that in many instances the accidents happened entirely from careless or reckless action on the part of the persons not in the automobile who were killed or injured.

Accidents often happened because these people stepped out into the street without looking, or from behind some team, post or other obstacle where they neither could see the vehicle nor be seen by its occupants, or under circumstances where such action naturally would not be expected. Commenting further upon the motor vehicle accidents, the commission says that in many other instances, while the pedestrian was clearly grossly careless, to say the least, the commission makes the astounding admission that it has suspended or revoked the license of the operator because he also was not as careful as he should have been; though many times the accident has been less due to his fault than to the fault of the pedestrian.

Of the 77 persons who were killed in automobile accidents last year, 25 were in automobiles, 44 were pedestrians, four bicyclists, three occupants of carriages and one a street car passenger. Of the 963

persons injured, 378 were occupants of automobiles, 406 were pedestrians, 64 bicyclists, 111 occupants of carriages and four street car passengers. Of the total of 1,182 accidents, 867 occurred in the daytime and 315 after dark, 222 were in the country and 960 in cities and towns. In 1909 there were 314 accidents in the country and 816 in the cities and towns. These figures tend to show that in the country where automobiles are driven at highest speed the people have become accustomed to looking out for themselves, but in the cities they are careless, as stated by the commission, in stepping into and crossing the streets.

During last year the commission gave 197 hearings on automobile cases and investigated 429 accidents. As a consequence of its hearings and investigations the commission revoked or suspended 283 motor vehicle licenses or certificates of registration. There were revoked 107 operator's licenses and five car registration certificates, while there were suspended 170 licenses and one dealer's registration certificate. Convictions in courts were the cause of 94 suspensions or revocations, complaints made to the commission were the cause of 21, while 168 resulted from investigations made by the commission. In accidents where deaths resulted the commission revoked 14 licenses permanently, and the holders of 36 were reinstated. In nine instances the operator of the car was killed.

The charge against the largest number of operators whose licenses were either suspended or revoked was that of improper operation, and a total of 88 lost licenses for that reason. Other charges were: Accidents resulting in death, 67; reckless operation, 50; driving while under the influence of intoxicating liquor, 22; neglecting to stop after an accident, 9; three convictions of overspeeding, 8; operating an automobile without the consent of the owner, 23; other charges, 26. There was an increase of 83 licenses suspended or revoked over the year 1909.

Courts of the Commonwealth gave the commission 3,709 abstracts of cases tried by them in which violations of the automobile law were charged. In 3,328 cases the verdicts were guilty. Of the total, 1,870 cases were of overspeeding and 74 of reckless driving. The fines assessed amounted to \$31,596.66.

Dealing with the state road condition the commission puts emphasis upon the increased cost of maintenance due to the growth of motor traffic. It specifies Jacob's Ladder road in the Berkshires as an example of the wearing effect of motor traffic. That road was built of the best quality macadam, was opened in the fall of 1909 and by the past summer was so badly worn that \$1,400 a mile was paid for repairs. The commission believes that the only way to preserve roads is by treating them with a bituminous material at a cost of \$500 to \$1,200 a mile.

NO DAMAGES FOR SPECTATORS

New York's Highest Court Upholds Dictum That They Cannot Recover If Injured—Echo of Early Road Race.

The man or woman who attends a road race in the capacity of spectator cannot recover damages of any kind for injuries growing out of such a race. This dictum was laid down a year ago by the Appellate Division of the Supreme Court, and now has been confirmed by the highest court of the state, the Court of Appeals. Justice Cullen wrote the opinion, his associates concurring.

The case which called forth this decision dates back to May 31, 1902, when about the first real "speed carnival" was held in this country. On that date there were run on the Southside boulevard, on Staten Island, N. Y., speed trials under the auspices of the Automobile Club of America, during which trials a Baker torpedo-shaped electric racing car got out of hand and swerved from the course and dashed full speed into a crowd of spectators, killing and maiming several of them. Among the killed was John Bogart, and his widow, Mary C. Bogart, filed a suit for damages against the city of New York and against the Automobile Club of America.

About the same time there was filed a suit for damages by one Louisa Johnson, who had been injured in the same race, and the lower courts decided in her favor. On appeal, however, the Appellate Division reversed judgment, for the reason that said Johnson woman at the time of the race had gone to the scene of the contest purposely to view it as a spectator. Taking a hint from this decision, the attorneys for Mary C. Bogart laid emphasis upon the fact that Mr. Bogart had not gone to the race with the intention of being a spectator, but had been present purely because of circumstances, having been killed while waiting for a trolley car at the crossing of Lincoln avenue and the boulevard on which the race was being run.

During the trial before the county judge it was brought out that the intestate on that day was building a fence near his home, seven miles from the scene of the race; that before noon he left the work, and, after changing his clothes, went direct to Lincoln avenue. At the crossing of Lincoln avenue and the boulevard he stopped, and it was here that he later was injured and died. The trial judge charged the jury that if the decedent was there as a mere spectator his intestate could recover, whereas if he was an actual participant she could not recover. The judge also charged the jury to find whether the decedent was there to get a trolley transfer

to continue his journey to another part of Richmond borough. The jury found for plaintiff, but the Court of Appeals reversed the judgment.

The Court of Appeals declared itself unable to find evidence to show that Bogart was a traveler upon the highway at the time of the accident. The accident occurred nearly two hours after he arrived at the crossing, and the court finds that he must have remained there as a spectator. The court also sustained the striking from the record of the statement of a witness that when Bogart left his house he expected to go to Midland Beach, to make which journey he would have been compelled to get transfers at the crossing. On question of this testimony the court said:

"The declaration by a person of his intention made without premeditation in connection with starting to do a thing or starting out upon a journey simultaneously therewith is sometimes received in evidence when all the circumstances and surroundings verify the disinterestedness of the declaration. The evidence stricken out by the court was not even the alleged declaration of the intestate, but the witness was cross-examined upon the subject upon which she had been interrogated by her counsel, and she was asked directly as to the testator's expectation when he left his work and proceeded easterly in the direction of the races. * * *

"When a person declares the intention or expectation of another apart from acts or statements from which the conclusion is derived, it is manifest that his declaration is a mere conjecture or conclusion derived from other facts. The conjecture or conclusion of a witness is generally improper and incompetent, and should not be allowed as testimony in a case. The facts and circumstances should be given from which the intention or expectation of the person under consideration can be determined as a fact."

Albany Club Returns to the Fold.

The Albany Automobile Club, which got mad and refused to play any more with the New York State Automobile Association and hence with the A. A. A., has recovered its equilibrium. It has rejoined the association and promises to "be good" forevermore. The insurgent state association, which it tried to form, is therefore off—away off—and instead of trying to influence legislation on its own account the Albany club henceforth will work hand in hand with the other clubs.

Full Moon Not a Valid Excuse.

Down in Texas a motorist, who was haled to court for driving his machine without lights at night, pleaded that as the moon was full he did not think lights were necessary. Although the moon still shone brightly, the court could see nothing but a fine of \$10 which was the amount assessed.

The Sale of Motor Trucks from Several Viewpoints

He was of the upstanding, wiry type of manhood that sometimes is gray but never old, and he commanded particular attention because, in an automobile show, he was offering to buy horses. That was enough to draw the curiosity of any man, and the farmer—for such his bronzed skin and clear, shrewd eye proclaimed him and such he proudly acknowledged himself to be—was not slow to press the advantage. Quickly stepping around the big truck chassis, across which he had made his unexpected offer, he pinned the visitor against the frame with a bony forefinger and reiterated emphatically:

"I said 'I'll buy your horses.'" Then, after a rhetorical pause, he explained:

"If you are using horses in your business and want to change over to motor trucks, I'll take all your horses off your hands and make you a good allowance for them."

Here was a new angle on the motor haulage problem, at least new to the visitor, and he acknowledged he was interested, which was wise, seeing that escape was cut off anyhow. The visitor had no horses to exchange for motor trucks, as a matter of fact. But what would he of the peaked cap and shaven chin do with a stable full of horses? Sell 'em?

"Sell 'em? Sure. I'd get rid of 'em all right," he declared. "Where? Well, the last ones I sold was a pair of gentleman's driving horses to a doctor up in Yonkers, and I guess he was satisfied—I know I was, anyway."

"Why, young man, I've been trading horses all my life. I've got about a hundred head of 'em now on a breeding farm down in Vermont state, and I'll undertake to dispose of all the horses you want to sell, automobiles or no automobiles. But I got interested in this motor truck business here a while ago and decided to go into it, and so I came down to Yonkers and opened an agency for this truck and another one."

Presently discovering that he was not conversing with a prospective buyer of trucks but with a Motor World man he became all animation.

"Say, what do you know about the 'Handcar,'" he said, mentioning the name of a well-known make of air-cooled car that is gaining considerable prestige in the delivery field. "Now you go around to all the shows and get a chance to talk with a lot of people, what do you hear about that machine?" Being given assurance as to the generally good reputation of the product in question he continued enthusiastically:

"Why, you can't touch it! It's simple

and light and it does the work. And what any man wants with a water-cooled engine when air will do the work is more than I can see.

"Now, I handle this here car, too," he said. "I had to have a big machine to take care of a few customers up in my territory that need that kind of a proposition in their business. It's all right, too. Of course, they did have some trouble with the engine last year, but outside of that there's nothing the matter with it. The makers are replacing all the old engines free of charge, though, and that's all there is to it."

"Anyhow," he added, pertinently, "the man that buys that kind of a truck don't care what kind of an engine goes into it. Sometimes he don't even know it's got an engine, as you may say. He just looks out for the guarantee and makes sure that the manufacturer is going to stand behind his product and that's about all there is to it. And when you come to think of it, that's about the way it ought to be."

The man from Yonkers—and Vermont—undoubtedly expressed one of the truths about the commercial vehicle end of the automobile business that only just is beginning to be apparent. The motor truck buyer, being a business man pure and simple, is interested in results rather than theories, prospects rather than promises. Hence his choice of a new vehicle or of an installation of several new vehicles is governed not so much by the mechanical ingenuity displayed in its construction as by the prospects of what it will do, either as demonstrated by past performances or as expressed in the reputation of its builder and the terms of selling and maintenance agreements.

Such being the case it behooves the sales department of every motor truck building company to be exceedingly watchful of the performance of vehicles that have passed through its hands. Sometimes the reputation of a product requires almost as zealous safeguarding as does the credit of its manufacturer, and the commercial vehicle affords a good instance in point.

"Yes, the overloading of our trucks is one of the things we find most difficult to guard against," said one of the many dealers interviewed at the two big shows. "Of course, our rigs are built to stand considerable abuse, and you must understand that under certain conditions, such as good pavements and level streets, for instance, very heavy loads can be taken care of without danger of straining the truck. With poor roads and heavy grades to contend with, on the other hand, there are times

when even the normal load for which the truck is built, while not excessive, throws so much of a burden on the mechanism as to be uneconomical.

"A certain amount of judgment is required in loading, you see," he continued, "and that is what makes the overloading problem a difficult one to solve. It is all well enough to place a safe load limit on the vehicle and stipulate that that limit shall not be exceeded. As a matter of fact we cover that point in what we call our '2,500 pound loading clause,' which is inserted in every contract. But you can readily imagine how difficult it is to enforce such a provision, and how much chance we stand of proving that the safe load has been exceeded when a customer complains of poor service or breakdowns."

"We may be morally certain that the whole trouble comes from abuse of the machine, but moral certainty and proof are different quantities. Another thing, it is not always good business to press the point too far. The truck owner has his own troubles, too, you know, and it often happens that he is no better able to prevent abuse of the machine than we are."

"When you come right down to it it is the driver who is directly responsible for the welfare of the machine in almost every case, and if you can manage to get any hold on the driver you stand a fair chance to satisfy the owner. Otherwise Mr. Driver may prefer some other style of machine, or become discontented with his job, or get on the 'out' with your salesman and either start 'knocking' the truck or abusing it in use. Sometimes he will do you untold injury through mere carelessness or stupidity."

"With this idea in mind we do take one precaution that seems to be effective and that, in a way, covers the overloading difficulty about as well as we know how to take care of it. We reserve the right to 'sack' the driver. The truck owner hires him, pays him any salary he chooses, handles the truck in any way he sees fit, subject to certain provisions of our maintenance contract. But if the operator seems to be working against our interests or is really incompetent to handle the truck to best advantage, why we just have him fired; we have that definite provision in the contract."

"Putting it up to the driver" doubtless is effective in many instances, but the real responsibility for the performance of the machine naturally rests with the owner himself. The truck salesman's work is largely educational, at this time. He must

educate the buyer to a point where he has sufficient confidence in the motor truck to invest—and sufficient confidence in the dealer's own particular brand of truck to invest in the right one. He must then continue the "schooling" to a point where the owner is prepared to take proper precautions to operate his equipment under proper conditions. Then he must begin all over again with the instruction of the operating force in the rudiments of economical operation. Just what is involved in such a program is difficult to appreciate unless the experience has been gone through personally.

"Yes, we do have some difficulty in getting the drivers to take proper care of our trucks," said a New England agent, when questioned as to some of his "troubles," but we have more difficulty in getting the owners to get the drivers to look out for the rigs. As we look at it, the owner himself is the one whose interests are most involved and who, besides, is the only one who is able to exercise constant supervision over the operation of the machine. So we make it a point to follow up the 'education' of both owner and driver by impressing the former with the importance of overseeing the handling of the machine, particularly with reference to inspection and overhauling—for there is where the real difficulty lies.

"You can overload a truck, overspeed it, strain it on bad roads and variously abuse it, and if it is properly taken care of nothing will happen except that the up-keep costs will mount up in direct proportion to the overworking of the machine. But if your chassis is not taken care of in the right way, but is allowed to run down, the upkeep is going to be something 'fierce' and the haulage results are going to show a corresponding loss of profit.

"Sometimes we are successful in working along these lines and sometimes we are not," continued the agent, who hails from a busy little city, hedged in by hills, and whose record shows that he has been uncommonly successful in selling an "outside" truck in competition with the product of a well-known builder of commercial vehicles in the very community where it is made.

"Just to show you the extremes we encounter, we have one customer who ran his truck 7,200 miles before his 'frictions' wore out," (the agent's product is of the friction-driven variety, it is hardly necessary to explain), "and then the fellow kicked because his tires were worn down almost to the rims! But that same truck makes furniture deliveries anywhere within a 20-mile radius of town—and we can't get out of our burg without going up hill.

"Then we had another customer who put his old teamster on the truck and placed implicit confidence in his skill and discretion. What happened? Why that teamster let a nut work loose on one of the transmission bolts, with the result that it

came off one day on the road and yanked the mechanism right out of the chassis, wrecking things generally. There was no question of responsibility; it was perfectly easy to trace the difficulty right back to that one little nut that the driver had failed to inspect. But the owner was very much mystified. If the truck had been right in the first place, he wanted to know why that nut should work loose!"

So far as the educational requirements of the motor truck business are concerned, the two commercial vehicle shows provided an unparalleled opportunity for study, for learning the intimate properties of the vehicles themselves and also for observing the gradual solution of the ever-troublesome "human equation" in respect to the making, selling and operating of the machines. Just here, oddly enough, the old, old difficulty of the incompetent show attendant crops up. His offense is bad enough in the pleasure car shows, where he is simply employed as a "bluffer" to answer foolish questions, while the real salesmen remain in the background ready to rush forth from their lairs and buttonhole any visitors that look like "live ones." But when the show is a show of commercial cars and the visitors, however they may "stack up" in the matter of personal appearance, average 40 to 50 per cent. real "prospects," the blundering demonstrator is more than an annoyance; he is a detriment to his employer's business.

"Well, what do you know about that?" said a perspiring individual who stumbled, puffing and chuckling out of a booth and plumped into the Motor World man, who happened to be passing. He was one of those fat men whose mental machinery requires the oil of speech and to whom a stranger is as good a listener as a friend. Consequently he laid hold of the newspaper man by the coat and detained him forcibly.

"We 'rube' agents may not know a h— of a lot about trucks," quoth he, "but we do know automobiles from the ground up and we're here to learn. But what are you going to do with a feller like that—Huh?"

"Why, I'll bet you I know more about that truck, just from looking at it, than that guy does—an' I never saw it till just now. I got him all mixed up trying to explain their new clutch to me, and when I asked him what kind of a transmission that was he said 'planetary.' But it's the first planetary I ever saw that had sliding gears in it—what?"

Strong Argument for Motor Fire Engine.

That the presence of an automobile fire engine in any city is of real monetary value to its residents was forcibly impressed upon the citizens of Pueblo, Col., last week, when the fire insurance companies notified the city council of their intention to raise insurance rates unless the council forthwith saw its way to purchasing an automobile fire apparatus. It appears that sev-

eral months ago the fire companies lowered the rates with the understanding that an automobile fire truck was to be furnished. The city fathers, however, were wrangling over the make of truck to be bought, and the fire insurance companies did not like the delay, hence the ultimatum. (Aside from the facts disclosed the dispatch seems to hold the germ of a new style of graft which very easily might be perpetrated upon city councils—by clubbing them into submission through the medium of rate-raising. Now if, for instance, one or two of the insurance underwriters or "rate fixers" happened to be "financially interested" in some motor truck factory—but why dwell upon such possibilities! The citizens of Pueblo are said to be eager to install the automobile fire engine in order to secure the lower rates.

The Joke on the Garageman.

The folly of looking for a radiator on an air-cooled car was realized a few days ago by the employe of an automobile garage in Faribault, Minn. He spent about three hours one cold night trying to drain the radiator of a Franklin car. The automobile in question is owned by J. G. Prichard, of the Robertson Motor Co., of Minneapolis. He had business in Faribault, which is about 50 miles south of Minneapolis, and not being able to return the same night took the machine to the garage.

"It is a pretty cold night," remarked the garage employe as Prichard approached him.

"Yes; I think I have frozen both my ears," returned the Minneapolis man.

"You will have to drain the radiator of your car," suggested the other, "before it is laid up."

"But I can't drain it," replied Prichard with a suspicion of a smile.

"Well, then, I will do it for you, because it will freeze if it isn't done," said the garage attendant.

"All right, go ahead," and with that Mr. Prichard left for a hotel where a hot supper had been prepared for him.

But the garage man, although he worked about three hours trying to find the stop-cock in order to drain the aforesaid radiator, was unsuccessful.

When Prichard went for his car the following morning the garage employe was awaiting him and admitted that the joke was on him.

Peculiar Cause of Garage's Wreckage.

A rather unusual accident occurred last week in Poughkeepsie, N. Y., where a concrete garage was being built for William Arnold, on Lloyd avenue. The temperature was near zero and the concrete pillars became frozen before having had a chance to set properly. When a sufficient weight was placed on these pillars during the course of construction they crumbled and the garage became a total wreck.

TRACTION ENGINE FOR FARM WORK

**Cultivator Embodying Novel Features
Evolved in Georgia—How Clogging by
Soft Earth is Prevented.**

Increasing the efficiency of the farm by the saving in horse fodder made possible through the introduction of motor-driven machinery is a mode of industrial economy that rapidly is gaining the attention of the modern rural business man. The output of

forward over the tractor axle, transmission being carried out by means of friction disks and spur gearing. The driving gearing of each of the tractor wheels is independent of that of the other and may be controlled independently. This feature is of particular value in steering the machine, as it permits a turn to be made within the length of the wheel base. For this purpose, the control is accomplished automatically through the steering control, which, when turned in either direction, operates the transmission mechanism in such a way as

center to center of the tractor wheels and both the motor and working implements are mounted on the triangular frame which extends from the axle ends to the steering head over the rear wheel. The tractor is equipped with a two-cylinder, two-cycle water-cooled motor, the radiator for which is mounted at the forward end of the machine. The total weight is approximately 4,500 pounds, and the power output 25 "horse." The cultivator is designed to work two rows simultaneously and also is suitable for breaking, planting, hauling and general power purposes. For the latter service a belt pulley is provided. Special means also is installed to raise the cultivator blades or other working devices by engine power, so that the work of the operator is exceedingly light.

The lighter model, which is equipped with an 18 horsepower motor and weighs about 3,000 pounds, is designed exclusively for planting and general cultivating, although it also may be applied to general uses, either as a power plant or tractor.

Home-Made Register for Warming Cars.

Chauffeurs and others long have been familiar with the method of removing part of the floor boards of an automobile in cold weather in order to take advantage of part of the heat of the engine in assisting to keep their nether limbs warm. But a clever adaptation of the idea is credited to J. S. Johnson, assistant principal of New York's West Side Young Men's Christian Association's automobile school, and has been installed in the automobiles with which road lessons are given. An ordinary grating or register such as is used in houses equipped with hot air warming apparatus is fitted in place of part of the floor boards, and in order that all the heat of the engine may be utilized a piece of sheet iron is run from the under pan of the engine to the bottom of the car floor. The register may be closed when not required, and in closed front automobiles having windshield and curtains the foot warmer will furnish heat to everyone in the car.

Moscow Adopts Motor Mail Service.

Contacts have been made by the Moscow, Russia, postoffice with a local agency for French and German automobile manufacturers, for carrying all mail between the railroad depots and branch offices from 6:50 a. m. to 11 p. m. The equipment comprises 23 cars, carrying capacity 2,160 pounds each, and two platform trucks, each carrying 6,480 pounds. The automobiles all are of 20 horsepower and of French origin. The contract, including chauffeurs, is \$3,708 per year for each vehicle; total, \$92,700. Since the introduction of the 25 motors, the number of horses used in carrying the mails has been reduced from 252 to 148, which will be further reduced this year when 15 more motors are added.



McKINNEY TRACTION CULTIVATOR PERFORMING ITS WORK

mechanical farming implements is increasing at a prodigious rate as is the production of agricultural motors of one sort and another, but a novel position in the field is that which the McKinney traction cultivator has been designed to occupy. A number of farm motors have been designed with the object of affording traction to agricultural machinery of one sort and another and also, in several instances, to furnish a certain amount of haulage capacity. The new McKinney traction engine, however, is intended primarily as a field machine and is designed, as its name implies, as a cultivator.

This modern substitute for the plow-horse, which has been produced after several years of careful development, is made by the McKinney Traction Cultivator Co., a million dollar concern recently organized in Gainesville, Ga. In point of having been designed and built expressly for a certain class of farm work, the machine is unique. It is of the three-wheeled variety, the third wheel, which is in the rear, being used for steering alone. The motor is mounted well

to cause one of the wheels to turn at reduced speed or to remain stationary for the moment. The steering wheel, as will be observed from the picture, can be thrown around at right angles to the normal line of travel if necessary.

The most original feature of the machine is the construction of the traction wheels, which are made with heavy side flanges, between which are securely riveted "buckets" or treads which measure six by ten inches and which are placed parallel to one another but at an angle of 25 degrees upward from the ground. In action the treads press downward and backward on the soft earth in much the same way as the toe of a boot in walking, while on bad roads the outer rims hold sufficiently to prevent skidding. As there is a space of $2\frac{1}{2}$ inches between the tread surfaces there is no danger of the wheel becoming clogged, while on newly turned earth the effect is to loosen rather than to pack it.

The machine shown in the picture is the heavier of two closely similar types which are being built. It measures six feet from

The How and the Why of the Edison Storage Battery

While a great deal of attention has been attracted to the so-called alkali storage battery, as distinguished from the more familiar acid battery of which the common lead cell is a type, it is not generally appreciated that the Edison nickel-iron cell, while the first of the alkaline type to attain a considerable measure of success, by no means is the first of its class. Earlier forms of alkaline storage battery were those of Dezmaizure, of 1887, and Entz and Phillips, of 1893. The peculiarity of the new Edison battery, therefore, lies not so much in its chemical action as in the nature of its elements and in its ingenious mechanical construction.

What is quite as important as the fact that in developing the Edison battery a new combination of elements had to be secured and entirely novel processes of manufacture evolved, is the fact that from the very beginning Edison's object was the production of a transportation system suitable to displace the horse. This little-known point is brought out by Walter E. Holland in a paper recently read before the Electric Vehicle Association of America.

"Some of the factors which determined Mr. Edison to go out for a storage battery and the processes which led up to the final achievement are tersely told in his own expressive language," he says:

"Started with the broad idea that displacing of horse-drawn vehicles in cities would be an immense advance.

"That the ideal vehicle was electric.

"I believed that nature could afford one more reaction and I started.

"After an enormous number of experiments I at last found a reaction that, although very weak, was promising, and I pursued this for three years, finally producing the first type of the nickel-iron alkaline battery."

"It is interesting to note," Holland continues, "that from the very first he has concentrated his attention on a battery for use in the field of vehicle propulsion. His first alkaline battery patent makes mention of the qualities most needed in vehicle service. It says:

"The object of this invention is to provide and produce a reversible battery which is light, portable and durable."

"Since vehicle propulsion is the most difficult field of service, obviously, a battery meeting its needs would fulfill the requirements of most any other condition.

"The first discovery of the elements of the Edison battery was rather easy as compared to the development and practical application of the principle. Three different

commercial types of cell were brought out—type 'C' in 1902, and types 'D' and 'E' in 1903—all of which were unsatisfactory, for reasons which it is not necessary to go into at this time, and real success was not attained until the year 1908—seven years after the announcement of Edison's discovery—at which time the radically different construction embodied in the present 'A' type cell was perfected. * * * *

"The active materials in a charged Edison cell are metallic iron in the negative electrode and peroxide of nickel—probably hydrated—in the positive. The electrolyte is a 21 per cent. solution of potassium hydrate containing lithium hydrate in small quantity. The materials are not put into the plates in the charged form, but the iron as a mixture of oxides and the nickel as the green nickel hydrate. The first charge reduces the oxides of iron and oxidizes the nickel hydrate and thereafter they probably never return to their initial condition. In each subsequent cycle the negative charges to metallic iron and discharges to iron hydrate, while the positive charges to a peroxidized hydrate of nickel and discharges to a lower hydrate.

"Current passing in either direction (charge or discharge) decomposes the potassium hydrate of the electrolyte, and the oxidations and reductions at the electrodes are brought about by the chemical action of its elements. An amount of potassium hydrate equal to that decomposed is always reformed at one of the electrodes by a secondary reaction, and consequently there is none of it lost and its density remains constant.

"Innumerable repetitions of tests have shown that cells as commercially manufactured by the Edison Storage Battery Co. have surprisingly uniform capacity, and that under any similar conditions, no matter how abnormal, different cells will give practically identical results.

"Edison cells do not have as high capacity when new as after some weeks of use. The betterment comes from an improvement of conditions in the nickel electrode which is brought about by regular charging and discharging. Overcharging expedites this self-formation and is recommended. Every cell manufactured is given three overcharge runs before leaving the factory, which is always sufficient to bring the output up to the rating, but full capacity is not attained until after at least 20 complete charges and discharges.

"The output and efficiency of a cell, working at ordinary temperatures, depend upon three factors—the rate of charge, the

amount of charge and the rate of discharge. Best results are obtained charging at normal to two-thirds normal rate, but much higher rates may be employed with little sacrifice of efficiency.

"The Edison cell has an air-tight cover, a valve being provided for the escape of gas. Practically no water is lost by evaporation, therefore, and a battery can be left idle for months without attention and there will be no danger of the solution becoming low. Water is lost when a battery is working, however, and this results entirely from overcharging, for any current which is not used to effect the chemical changes at the electrodes, goes to produce hydrogen and oxygen, the elements of water, which are emitted as gas. To replace this loss, pure water must from time to time be added. The figure of ampere-hour efficiency represents the proportion of a charge which goes to produce the desired chemical changes at the electrodes and the difference between this figure and 100 represents the loss of water. * * * *

"The materials used in the cell being exceedingly durable by nature, and the construction being very rugged, a cell will stand an almost unlimited amount of vibration and shock without injury. In one of the tests a jolting machine is used, which lifts a cell ½ inch and drops it on solid wood about 60 times per minute. In one case a 13½-pound cell was dropped 1,750,000 times in this machine with practically no effect on its electrical characteristics.

"The perforated container construction prevents loss of material by disintegration. No harm is done by charging an Edison cell in the reverse direction or even by completely short circuiting a fully charged cell. In fact, this remarkable cell thrives on short-circuit discharges. Normal tests made before and after nine short-circuit discharges showed an actual improvement as a result of the drastic treatment.

"Light weight in a battery is a very desirable feature, and makes possible the building of vehicles of exceedingly high mileage capacity. The normal output per pound of complete Edison battery is 14 to 18 watt-hours depending upon the type of cell and the length of charge. A feature of the Edison battery is its great durability. This point has been demonstrated in many laboratory life tests, but the most convincing proof comes from actual service where thousands of batteries are now giving excellent satisfaction. The oldest batteries went in commission two years ago and are doing the same work now as then, showing practically no deterioration."

CHEAP CARS WANTED IN GERMANY

Big Firm Now Investigating the American Market—Methods that Help and that Hurt Export Trade.

With the view of testing their efficiency and subsequently taking the agency for one of them, the manager of a firm in Mannheim, Germany, has been sent here to investigate various makes of the smaller American cars, according to the American consul at Mannheim, Samuel H. Shank. The company, he says, was organized in 1904 with a capital of \$476,000 to sell this certain car in specified territory. It de-

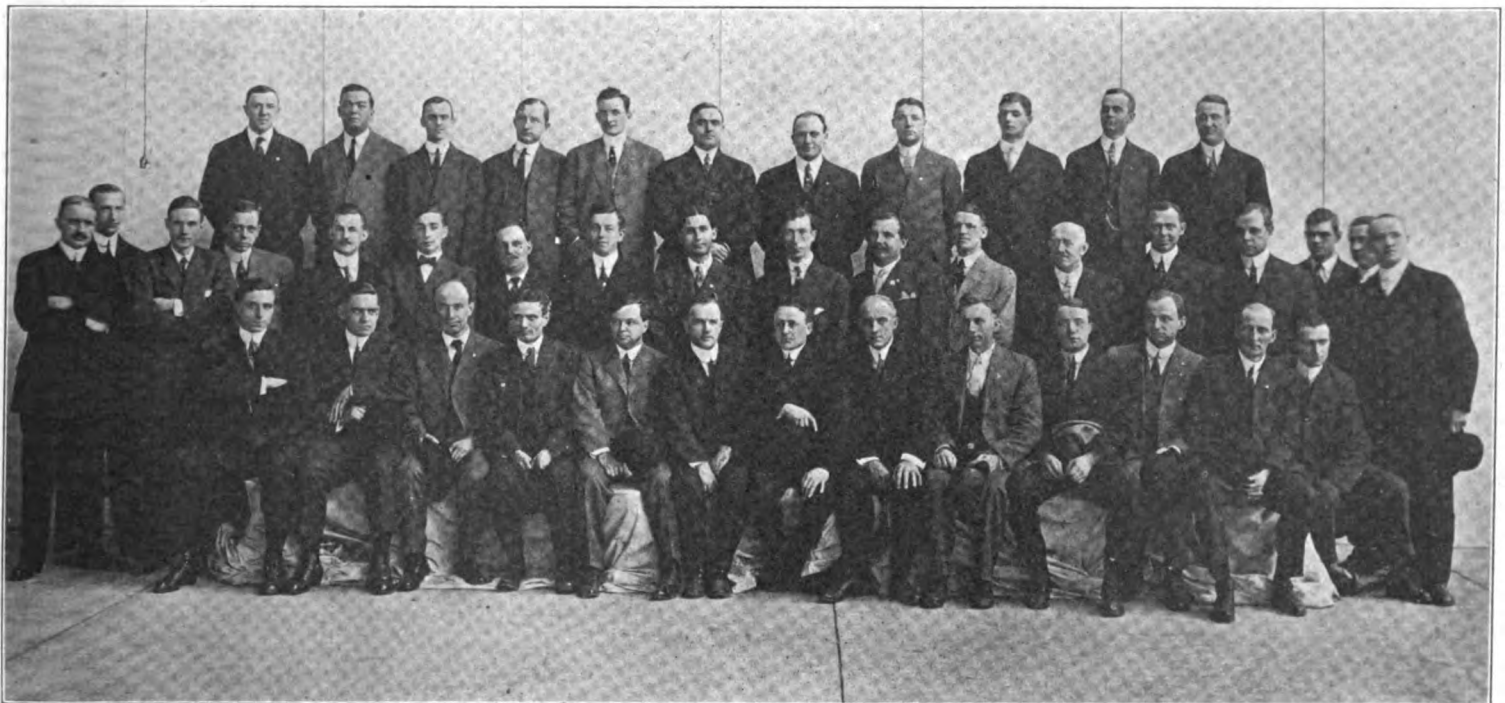
agent in Berlin. This agent was also the representative of a well-known European car. After having sold some 10 or 12 of the American cars the European manufacturer notified his agent that he would have to give up one agency or the other, and he naturally retained the European. In consequence the American company had no representative in that territory. Now it was not the loss of future trade there, but it was the harm done to all American trade by the company not being able to look after cars already sold. The complaint has been that when a part was broken on an American car it was very difficult to replace it. Where there is no representative of that make of cars in the country, it is almost impossible to get repair parts. I

product. In these districts, says Consul George N. Pickerell, at Para, the repair shops and other facilities do not exist, and communication is limited to two, or possibly three, steamers a year. For these reasons a machine once introduced can seldom be supplanted, even when the substitute is cheaper and better. The replacement of parts, etc., also is a matter of difficulty in those regions.

Singapore Proving a Strong Market.

It is evident that the motor car is gaining ground in the Malay Peninsula, as an increase of more than 110 per cent. clearly indicates. One year ago there were less than 200 automobiles in Singapore, while at the present time there are more than

THE JEFFERY SALES STAFF GROUPED AT THE RAMBLER FACTORY.



Reading from left to right: Top row—H. B. Walz, H. P. Thompson, G. R. Sutherland, E. J. Wall, Gilbert Williams, A. R. Rockwell, Al Reeke, W. G. Schultz, J. F. Hagen, J. A. Rose, C. H. Collins. Second row—W. H. Howe, C. O. Hart, M. B. Gilman, R. H. Gillies, H. W. Robbins, J. P. Zens, F. W. Perry, R. S. Bennett, L. A. Poundstone, J. M. Gaffney, F. J. Noetzel, L. P. Kilbourne, E. E. Stoddard, C. M. LeRoux, G. N. Bliss, E. A. Robbins, C. M. Halstead, E. S. Maddock. Bottom row—H. G. Musgrave, Geo. Norwood, I. R. Campbell, J. W. DeCou, G. H. Cox, E. S. Jordan, C. T. Jeffery, O. C. Hutchinson, L. B. Harvey, W. E. Dusenberry, G. R. Ruckert, W. S. Simmonds, M. E. Lebon.

clared a 10 per cent. dividend the past year, sales having been about \$800,000. It had been the intention of the selling company to manufacture a cheaper automobile on account of the constantly growing demand for a more moderately priced car, but the selling company has decided to try American cars first.

"There is a growing demand here for a cheaper car than most of the German makes, and if the American automobile manufacturers would go after the business in the right way satisfactory results should be obtained," adds Consul Shank. "As an instance of the wrong way in which this trade has been sought I may cite the case of an American concern which secured an

have advised manufacturers to stay out of Germany until they are ready to deliver a sufficient supply of cars to meet the demand which may come and especially to furnish their agents with a good stock of parts for repair. If the trade is gone after in this way, I feel confident that any reliable, cheap American car can be assured of a good business in Germany."

Drawbacks to Cars in Rubber Region.

Considerable difficulty may be experienced by American manufacturers of automobiles and motor trucks in getting a foothold in the market of the Brazilian districts of Acu and Madeira River unless early steps are taken to introduce the

425. This increase, writes Consul-General James T. Du Bois, at Singapore, is taking place proportionately all through the Straits Settlements and the Federated Malay States, where there are 2,000 miles of fine roads, the planters making free use of cars in going to and from their estates. The government has established an excellent motor car system in connection with the railways, and it is giving satisfaction to the traveling public.

Locating Vanadium Foundry in Groton.

The Vanadium Metals Co., of East Braintree, Mass., has let contracts for the construction of a new foundry in Groton, Mass. When completed it will employ 50 men.

Correspondence

Effect of Increasing Wheel Sizes.

Editor of the Motor World:

We have a customer who is at present driving a car with $4\frac{3}{4}$ "square" motor, gear ratio $3\frac{1}{2}$ to 1, and which uses 34×4 wheels. He is desirous of changing the wheel equipment on this car to 36 instead of 34 inches, and has asked us what the difference in gear ratio would be and whether his engine would handle the 36 inch wheels in a satisfactory manner; also, what increase of speed such a change should show. Will you please give us a formula by which we can figure this out?

PHOENIX MOTOR CAR CO.,

Lexington, Ky.

[The effect on the virtual gear ratio of a car due to increasing its tire sizes from 34 to 36 inches would be to increase it by about 5 per cent. in this particular instance. That is to say, as $36 \div 34 = 1.05$ plus, the actual gear reduction of the car in question, which is to say $3\frac{1}{2}$ to 1, in effect, would be increased to $3.5 \times 1.05 = 3.67$, or practically 3.7.

Thus if the car makes 35 miles an hour when the engine is turning over at 1,200 revolutions per minute, with 34 inch tires, it would make about $36\frac{1}{2}$ miles an hour with 36 inch tires and with the engine revolving at the same rate of speed. Similarly a speed of 50 miles an hour made with 34 inch tires would be increased to $52\frac{1}{2}$ miles an hour, roughly speaking, by changing to 36 inch tires.

It is important to bear in mind that the effective increase in gear ratio applies to all speeds, just as it would were the bevel driving gears to be changed, or the sprockets on a chain-driven car. The effect would be to gear up the car about 5 per cent. on all speeds.

As you have not given the number of cylinders of the engine nor the weight or carrying capacity of the car, it is impossible to predict whether the engine will handle larger tires without difficulty. If it is a four-cylinder machine, as your statement of the cylinder dimensions and gear ratio seems to suggest, and of reasonably modern construction, the chances are that it will do so. There can be little doubt of it if the machine is used habitually on good and fairly level roads.

There are other ways of figuring the effect on the gear ratio of altering the wheel or tire sizes, but the one used is the most direct: simply divide the larger wheel diameter by the smaller and multiply the specified gear ratio by the quotient, to find the new equivalent ratio.]

Lays Claim to the First "Bull Dog."

Editor of the Motor World:

In view of the use by several makers at the present time of the name "Bull Dog"

in conjunction with their particular cars, especially the use of this name by one maker who is conducting a 100,000 mile tour with one of his cars, it will undoubtedly be interesting to your readers to know that the name "Bull Dog" as applied to an automobile, both as a trade name and to an individual car, was created in the fall of 1909 by the makers of the Inter-State car.

At the Grand Central Palace motor car show, commencing December 31, 1909, the Inter-State Automobile Co. distributed a pamphlet entitled, "Why We Name the Inter-State the 'Bull Dog'." containing illustrations of parts of these motor cars and explaining figuratively the features of Inter-State cars which parallel the characteristics and qualities of the Bull Dog species of canine. In the winter of 1909-1910 the Inter-State Automobile Co. conducted a tour from Muncie, Ind., to the Pacific Coast, and we have in our scrap book numerous press clippings featuring the performance of the Inter-State Bull Dog "40" on this tour.

Despite the national publicity which was given this endurance run by the daily press and the leading automobile journals, a certain Detroit Co. saw fit to appropriate the name Bull Dog with which to christen one of their machines which was sent out on a long-distance tour. While we grant that the name "Bull Dog," as applied to commodity, machine or merchandise, is public property, however, since the automobile public is well aware that we coined the name "Bull Dog" in connection with an automobile, it would seem that on ethical grounds, at least, our priority in the use of the name should have been respected by other manufacturers, and we can only excuse the breach of ethics of commerce by this maker on the score of the old adage to the effect that "Imitation is the sincerest flattery."

Thanking you for your courtesy in giving our letter space in your valuable publication, we are,

INTER-STATE AUTOMOBILE CO.,

Muncie, Ind.

Far-Reaching Speed-Law Decision.

Although the case of W. Seward Webb, Jr., and Herbert Payne, both of whom jointly and individually were accused of speeding within the limits of Nassau County, N. Y., did not involve any peculiar points of law when it came up for decision before Judge James P. Niemann, the decision which this county judge rendered, and in which he defined the duties of justices of the peace in connection with speeding cases, bids fair to acquire fame throughout the State of New York.

According to the evidence submitted before the justice of the peace before whom the case first was tried, the two motorists sped along the highways of Nassau county at the rate of 30 miles an hour. They were arrested under the provision of the Callan

bill which deals with speed limits and fined \$25 each, but the complaints were drawn up on printed blanks of the old law. Under the new Callan law a defendant is not necessarily charged with exceeding a speed limit of 30 miles an hour, but may be charged with operating a motor car recklessly and carelessly, and if it is shown that the car is being driven at a rate of speed in excess of 30 miles an hour for a distance of a quarter of a mile, that raises the presumption of carelessness and recklessness. In this case the information did not contain the allegation that the defendant had driven the car a quarter of a mile, and it was on this ground that the county judge reversed the decision of the justice of the peace, saying in his summary of the case that the charge in the information was not set forth to a sufficient degree of definiteness.

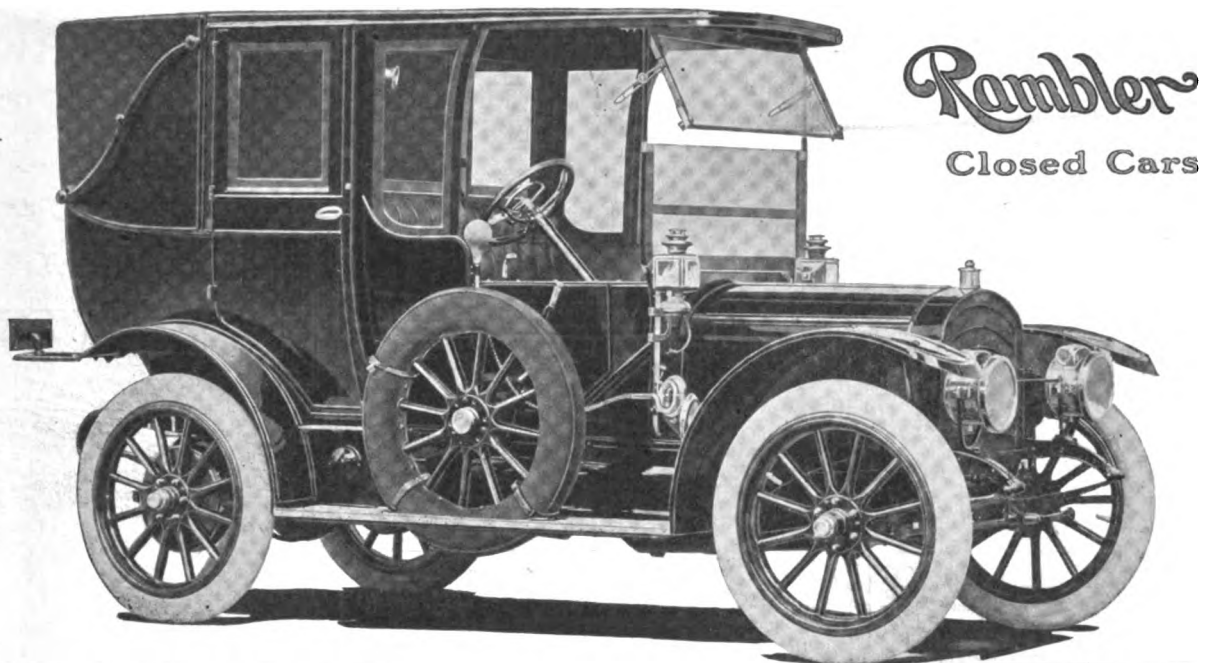
The effects of this decision are likely to be felt all over the state, because in nearly all the courts of the justices of the peace and police courts there are any number of old blanks left over which are being used continuously. As indicated in the opinion of the judge of Nassau County, fines and convictions obtained in such cases are illegal and may be reversed.

How Motor Cars May Thicken Ice.

In Worcester, Mass., an interesting tale is being told of an automobile in connection with the ice business, not for trucking, but for freezing purposes. One of the companies operating in that city cuts ice on a reservoir, and when it harvested its crop a few days ago its competitors were surprised to learn that the ice was 13 inches thick, whereas that cut on other places was only 11 inches. The answer was that the head of the company which cut on the reservoir used an automobile to make the ice freeze thicker. He first had the ice field grooved as is always done before it is to be cut. Then he put his heavy car on the ice and for hours drove it up and down around and across the ice field. Being acquainted with the scientific principle that crystallization is hastened by a little vibration, the head of the ice company applied it to the crystallization of water into ice. The machine kept up a constant vibration all over the field, and as a result the company was able to get a fine harvest of ice considerably thicker than its competitors.

Driverless Car Kills a Pedestrian.

In some manner, an automobile, while standing at the curb in front of the Seattle Athletic Club, Seattle, Wash., on Sunday night, the 29th ult., broke away, apparently without any sort of human interference, and dashed down a steep hill. It ran over Elmer Connors, 19 years old, and killed him. There was no one in the car at the time, and it stopped only when it ran into a street car.



Rambler
Sixty-three
Town Car

WITH a closed car the charm of motoring may be enjoyed throughout the winter. Daily rides may be taken in comfort, regardless of the weather. Necessary errands become a pleasure. With storm curtains between the glass front and cab seats, protection is afforded all passengers. On pleasant days the top may be folded back. The Spare Wheel eliminates worry about tire trouble. It can be so easily and quickly changed, regardless of snow, water or ice. The thirty-six-inch wheels with $4\frac{1}{2}$ -inch tires; seven-eighths rear springs, with shock absorbers, produce gratifying comfort. The trimming is leather inside and out. Seating capacity seven. Flexibility provided by the offset crank shaft and straight-line drive, that permits operation in high gear no faster than a man usually walks, particularly adapts this car to town use.


Rambler closed cars are made in landaulet, limousine, town car and coupe styles. You may inspect them at Rambler branches and dealers stores in principal cities.

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Main Office and Factory, Kenosha, Wisconsin
Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco

New York Dealers: The Rambler Automobile Co.
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USERS OF
INVADER OIL
THE OIL THAT GRAPHITIZES
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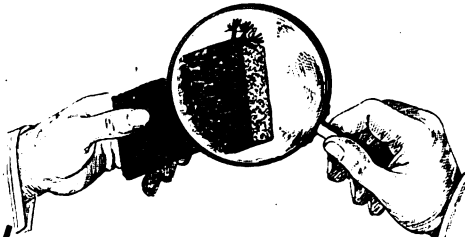

RECENT PATENTS.

975,696. Carburetter. John H. Koontz, Culver, Ind. Filed March 11, 1907. Serial No. 361,686.

1. A fluid mixing device, including a casing, a plurality of fanwheels mounted concentric to the casing, the alternate wheels having their blades oppositely inclined and the peripheral margins of the blades extending inwardly and inclined toward the center of the passageway.

975,774. Tire Inflating Pump. Charles Lewis, Auburn, N. Y., assignor of one-half to Henry Wegman, Auburn, N. Y. Filed May 12, 1910. Serial No. 560,991.

1. A tire inflating pump having a main frame, a secondary frame, a crank shaft and actuating wheel carried thereby, and a single bolt or shaft securing the said secondary frame and the cylinder of the pump



Examine J-M Non-Burn BRAKE LINING

Note the fine brass wires in every strand. These give Non-Burn added strength and longer life. Note how thoroughly the frictioning materials saturate its every fibre, and how strong and compact the lining is woven.

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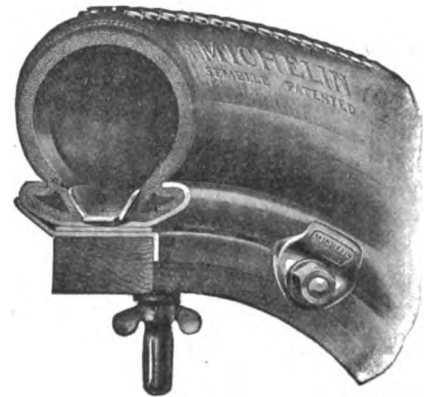
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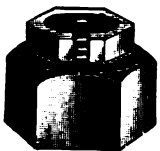
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to the main frame, whereby the said secondary frame and pump cylinder can be detached from the main frame by removing said bolt or shaft.

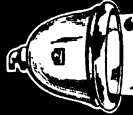
975,796. Internal Combustion Engine. Carlton R. Radcliffe, New York, N. Y., assignor to The Scientific Research Co., New York, N. Y., a Corporation of New York. Filed June 30, 1909. Serial No. 505,203.

1. In an internal combustion engine, the combination with the cylinders of an engine having inlets through which pure air is supplied to the same, of a single means for forming an overrich mixture of air and hydrocarbon under pressure, and means common to all of the cylinders of the engine adapted to direct the flow of said mixture to said cylinders during a prede-

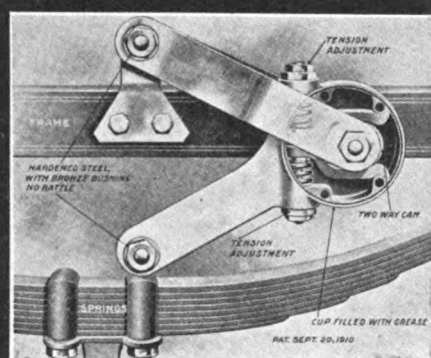
termined time between the end of the exhaust stroke and the point of ignition.

975,872. Radiator for Automobiles. Hermann Klein, New York, N. Y., assignor of one-third to William Reiter, New York, N. Y. Filed Sept. 15, 1910. Serial No. 582,194.

1. In an apparatus of the class described, the combination with the inlet chamber, of an outlet chamber, and a plurality of tubes for the circulating fluid arranged in pairs connecting said two chambers and being bent into undulating or serpentine form, each pair of said tubes having a common inlet and a common outlet.



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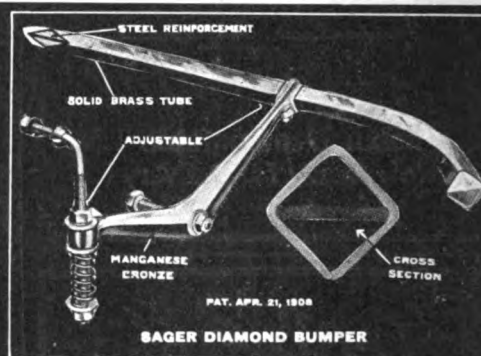
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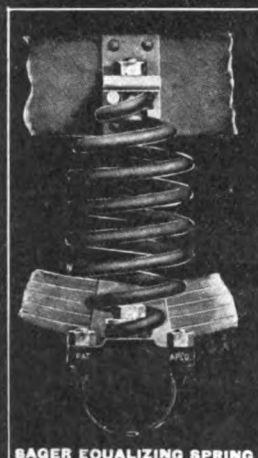
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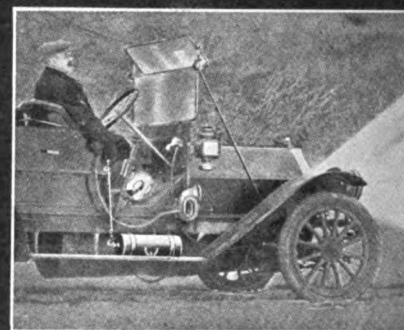
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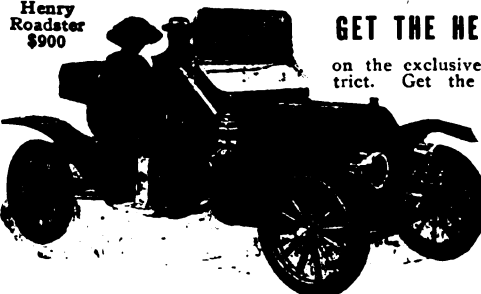
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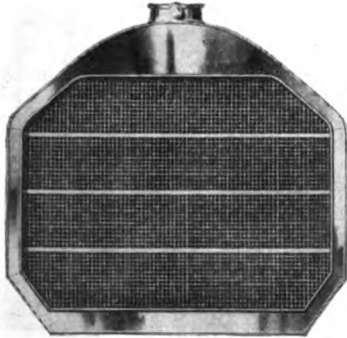


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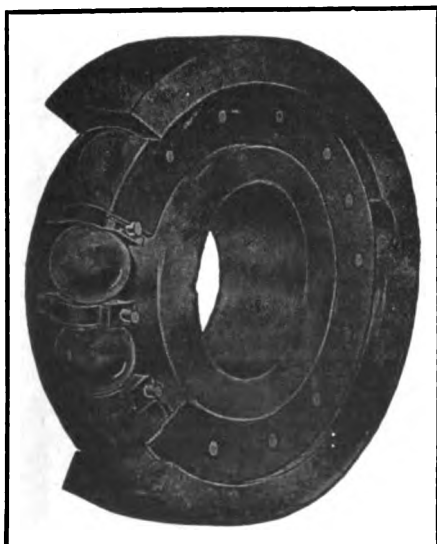
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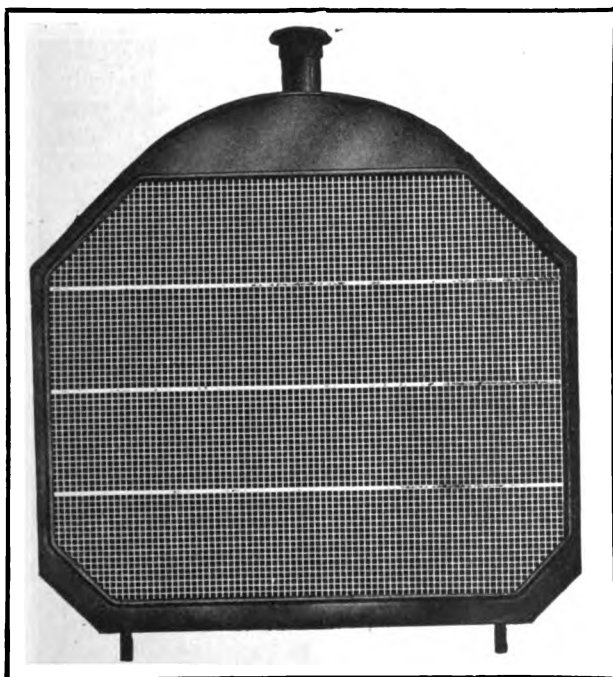
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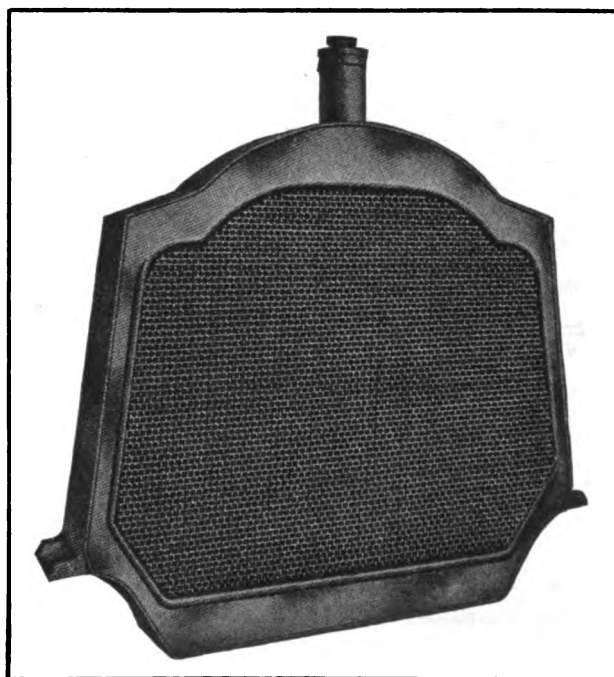
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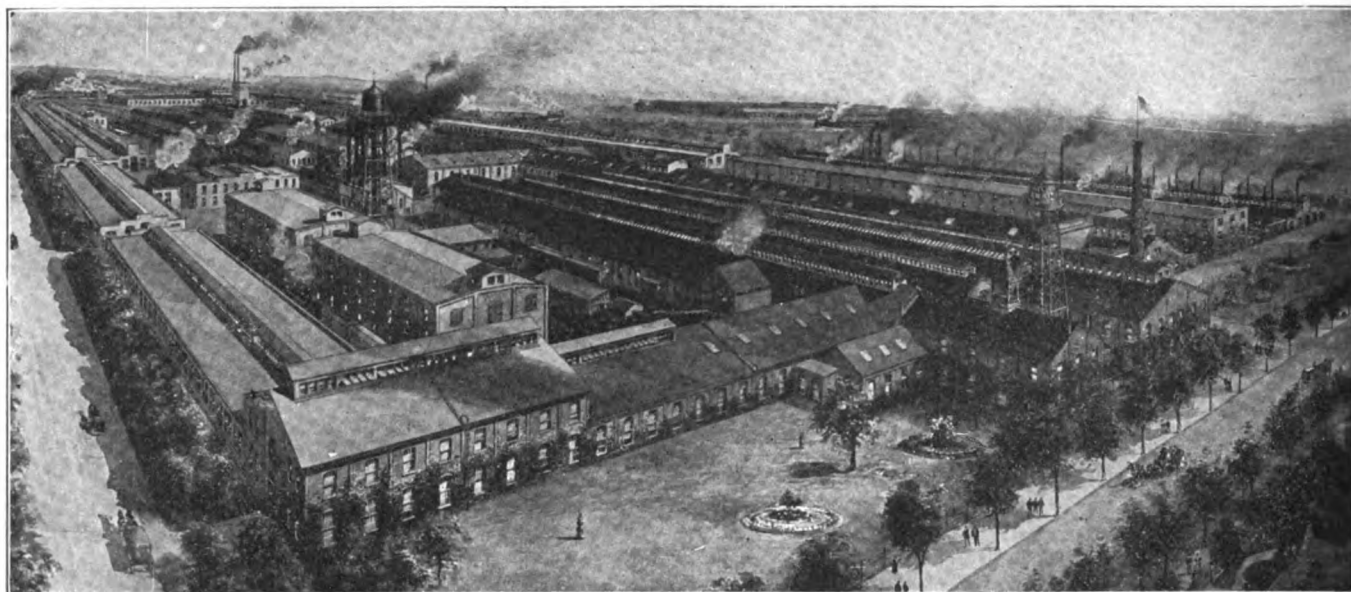
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(Incorporated)

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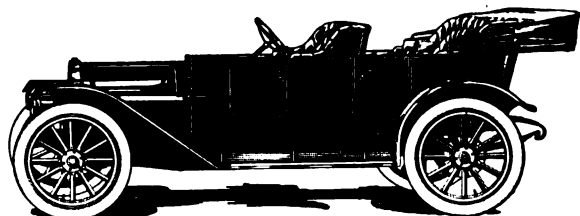
NEW YORK CITY

Kelly-Springfield Auto Tires

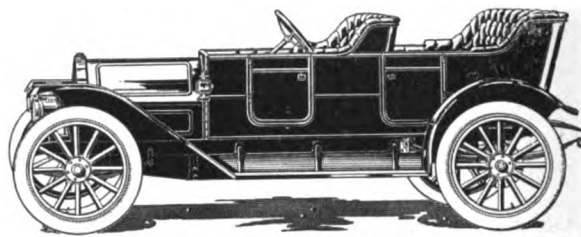
Made by the Makers of the famous Kelly-Springfield solid tire

THE ELIMINATION OF EXTRAVAGANCES

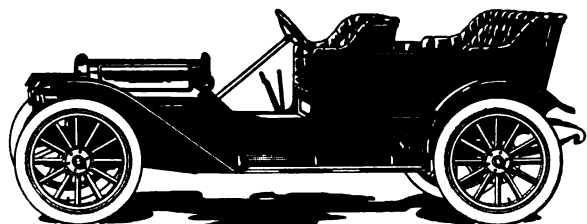
now is in process in the automobile business. There are a lot of them for which the purchasers of automobiles have paid high and which brought them no return. It was by avoiding these extravagances, these costs of high living, so to speak, that DeTamble cars were placed on the market at prices that set a new standard of values. You can't pay more and get your money's worth. Study the specifications.



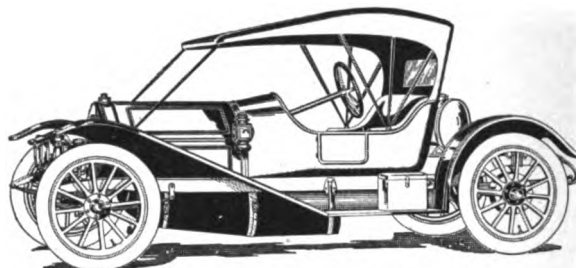
Model K—7-Passenger Fore Door—\$1,675.



Model J—5-Passenger Fore Door—\$1,200.



Model H—5-Passenger Touring Car—\$1,150.



Model G—2-Passenger Roadster—\$1,000.

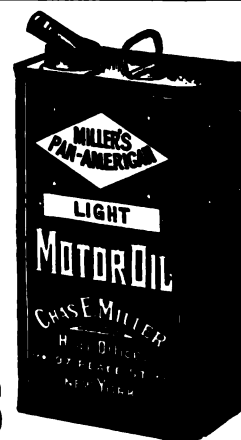
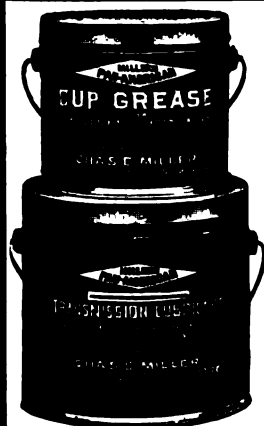
MODEL K 40—45 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; full floating ball bearing rear axle; 120-in. wheel base; 34-in. wheels; Splitdorf magneto; dual ignition; Rushmore gas lamps; Frost-O-Lite tank; three oil lamps; horn; mohair top; wind shield; speedometer; tools; jack and pump.

SPECIFICATIONS:

MODELS G-H-J—36 H. P. Unit power plant; 4-cylinder motor; three speeds and reverse; selective type transmission with imported annular ball bearings; multiple disc clutch; semi-floating ball bearing rear axle; 115-in. wheel base; 34-in. wheels; magneto and dual ignition system; Rushmore gas lamps; generator; three oil lamps; tools; jack and pump.

Catalog and full details of our complete line sent on request. Open territory proposition for live dealers.

THE De TAMBLE MOTORS CO., Anderson, Indiana



MILLERS' Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles. In order to convince you of the efficiency of these oils we are willing to make you a special price for an initial order, much lower than usually quoted on other high grade oils.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Special Prices for Manufacturers, Jobbers and Dealers

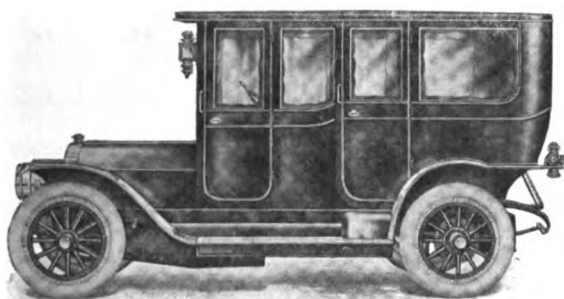
ADDRESS OIL DEPARTMENT

CHAS. E. MILLER, MANUFACTURER, JOBBER, EXPORTER AND IMPORTER
Home Office, 97-99-101 Reade St., New York City
The Largest Auto Supply House in America.

BRANCHES—Philadelphia, Boston, Cleveland, Detroit, Buffalo, Hartford, Atlanta, Brooklyn, New York City, New Orleans, Springfield.

The Limousine is King in Winter

It is comfort, convenience and utility worked out in their highest motor development.



1911 Knox Model "R" 40 H. P., 7 Passenger, Fore-Door Limousine. Price, fully equipped, \$4400.

In this age of startling progress what a great convenience it would be if you could step into a richly furnished den in your home and, closing the door, be rapidly whisked to your destination.

It would be a service of unmeasured value.

Yet the Limousine car standing at your driveway door answers the same purpose. It is a miniature room with complete furnishings of a high grade, designed solely for comfort. Writing materials, mirror and toilet accessories, together with the smoker's electric cigar lighter and ash tray are all there. And the long glass vase for cut flowers gives the final pleasing touch to the whole interior.

The new KNOX FORE-DOOR LIMOUSINE expresses this detachable room idea to the utmost. It is built with the sole idea of restful comfort and untiring service. Comfort not only for the passengers but also for the driver. And it has a lasting quality that stays new.

Our new catalog will tell you more.

Knox Automobile Company
Springfield Massachusetts

Members A. I. A. M.

Inter-State

THREE years ago we built the first Inter-State. When our big factory was completed we gathered there some of the greatest Automobile Brains in the country. We paid for these brains, as we paid for the very finest factory construction; we installed the highest type of machinery.

All this spelled permanency—stability. It was not a venture else we would have bought a cheap plant and cheap brains. We would have hurriedly built our cars to supply the "motor-car mad."

The reaction proved fatal to those of the fraternity, who in a "get-rich-quick" frenzy to supply an unhealthy market, fairly "threw" their cars together and whizzed them to the dealers.

The "assembled" cars are suffering keenly. As we predicted three years ago, the car manufactured under one roof and under the supervision of one corps of experts is the popular car today and for the future.

The Inter-State is painstakingly built *in our own factory*. We have sufficient capital to supply our raw materials, to buy the *best*, to be content with a fair margin of profit.

As an evidence of popularity of our "high-quality-sane-price idea," four more acres of factory floor space have recently been built for the logically increased output of Inter-States.

New catalog M. W. 216 upon request.

Inter-State Automobile Company
Muncie, Indiana

(78)

*Model 34—4-passenger, 40-h. p. Torpedo
\$2,000. Special equipment*

110,000 Pressed Steel Automobile Frames Our Output—August 1st, 1909, to August 1st, 1910.

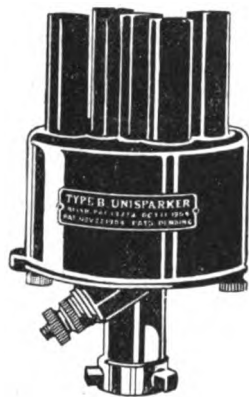
Over 110,000 frames actually shipped during the past year is a record of which we are justly proud. Our customers include 60 per cent. of the reliable motor car makers of America, and they attest the splendid service we give and the excellent quality of our workmanship, recognizing the fact that a "SMITH" frame is a distinct mark of quality and a valuable selling point for their agents. The great capacity of our new plant (1000 frames per day) enables us to take on additional business for the coming year, and we extend to you the opportunity to enhance the value of your car by the use of a "SMITH" frame.

SEND BLUE PRINTS FOR QUOTATIONS.

FRAMES
AXLES
CLUTCHES

A. O. SMITH CO., Milwaukee, Wis.

TRANSMISSIONS
STEERING COLUMNS
STAMPINGS



**3000 MILES
ON
SIX DRY CELLS
WITH THE
UNISPARKER**

**No Vibrators
No Commutator
Better than the Magneto**

WRITE FOR INTERESTING BOOKLET



PHILADELPHIA
PA.

650,000 BOSCH Magnetos

In Use

Ignition is apt to be a problem on your new car, boat, cycle or "plane." Let us send you a free copy of our magazine "THE BOSCH NEWS." It contains valuable facts and information.

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223-225 West 46th Street, New York

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Established 1844

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1895

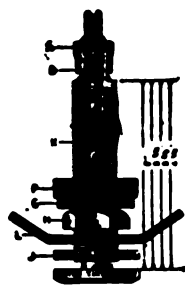
SIMPLE AND ABSOLUTELY AIR TIGHT

Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires, Hartford Dunlop Detachable Tires, Fisk Detachable Motor Tires, and New Goodyear Detachable Motor Tires.

Our No. 777 Motor Tire Valve is the standard for 2½ inch and 3 inch tires and our No. 725 Motor Tire Valve is the standard for tires larger than 3 inches.

Supplied to the Trade by All Tire Manufacturers

Manufactured by **A. SCHRADER'S SON, Inc., 28-30-32 Rose St., New York**



**A Complete
Line
for
the Agent**

**4 Cylinder Cars
24 to 40 H. P.
\$1500 to \$2500**

Write for catalogue
and territory.

KLINE KAR

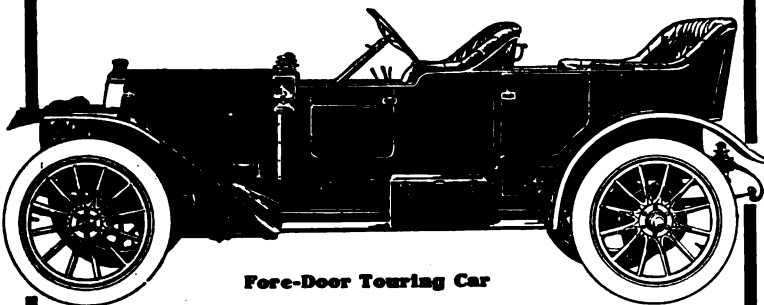
**Kline Kar
Owners
Are Satisfied
Customers**

**6 Cylinder Cars
50 and 60 H. P.
\$2650 to \$3250**

B C K MOTOR CAR COMPANY, York, Pa.

National 40

The prestige of the repeated racing triumphs
is a valuable asset to every National dealer.



Fore-Door Touring Car

The 1911 output is limited. Our present distributors want every car we can build and more. We desire wider distribution, however, and have an attractive proposition for a few more good dealers in unallotted territory. Better wire.

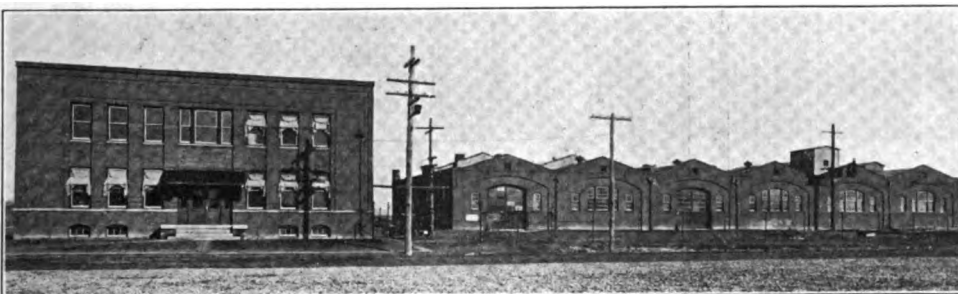
Open Touring Car, Open Top Tonneau, Speedway Roadster, \$2,500
Fore-door Touring, Fore-door Toy, 2,600
Fore-door Seven-passenger Touring, 3,000
Luxurious Limousine, Fore-door, \$4,000; Open, . . . 3,750

NATIONAL MOTOR VEHICLE CO.
1007 E. 22d Street INDIANAPOLIS, IND.
Licensed under Selden patent.

Pressed Steel Work and STAMPINGS for Commercial Cars ALL SIZES

OUR plant equipment is of the largest and most complete kind; our experience dates from the beginning of the automobile industry and our reputation guarantees the quality of the product. We are ready and willing to lend a helpful hand to builders and have a fund of valuable information which is at their disposal. Write us.

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Send Blueprints for Quotations to

WETHERILL FINISHED CASTINGS COMPANY, Philadelphia



For Pressure Castings

of any metal and size desired,
including Bronze, Aluminum
Alloys and Bearing Metals.

VALVELESS

Amplex

The one car in America that offers you all that a high grade, high power car can offer; and in addition the tremendous advantages in operation and maintenance which only a perfect valveless motor can give.

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The Royal Equipment Co.

Manufacturers of

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The Raymond and Duplex Brake**436 Housatonic Ave., BRIDGEPORT, CONN.****BOWSER****Gasolene Storage Systems**

Keep oil perfectly clean, safe and strong as when purchased.
Systems Suitable in Style, Size and Price—for your individual need.

We make the lowest priced and we make the best systems.

Write for our new book—34. It's free and of interest for you.

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FOR LONG RANGE - FOR SHORT RANGE

SIRENO**ELECTRIC HORN**

The choice of motorists who realize the need of a long range warning and the value of press-the-button operation, yet who desire not to startle or offend those whom they warn.
It is the signal of a gentleman and a careful driver.

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FREE—The most complete, comprehensive and condensed vest pocket reference book ever published on the subject. Full of valuable hints. Tells just what you want to know about Ignition, etc.—makes you master of your own ignition system. Write at once for a copy.

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\$1.00
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BROWN-LIPE GEARS

Transmission and Steering Gear Department
Operated by

BROWN-LIPE GEAR COMPANY

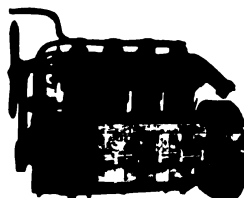
Differential Gear Department by

BROWN-LIPE-CHAPIN COMPANY

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Capacity Immensely Increased

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MOTORS

have replaced nearly every make of motor in every make of car. This alone proves that it is superior to any other motor built.

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MARION, IND. LOGANSPOUT, IND.
Sales Department, Marion, Ind.

Stevens-Duryea Motor Cars Built 'Round a Principle



Model "AA" Landulet
Price \$4800.00

Apart from the general distinctive appearance, comfort, reliability and simplicity of the Stevens-Duryea, the exquisite finish in detail of body work and mechanism are other reasons which must influence you in your selection.

Let us mail you our literature.

STEVENS-DURYEA COMPANY
Chicopee Falls, Massachusetts

Mosler Spit Fire THE PLUG WITH THE DEEPEST CHAMBER Leads the World

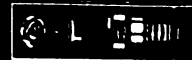
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Our SPIT-FIRE Plugs are for sale by
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If you cannot get a delivery—
THERE'S A REASON!

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FREE OIL

Generous sample "3-in-One" for your sewing machine; oils perfectly; won't gum, collect dust, turn rancid; lasts long; free from acid.

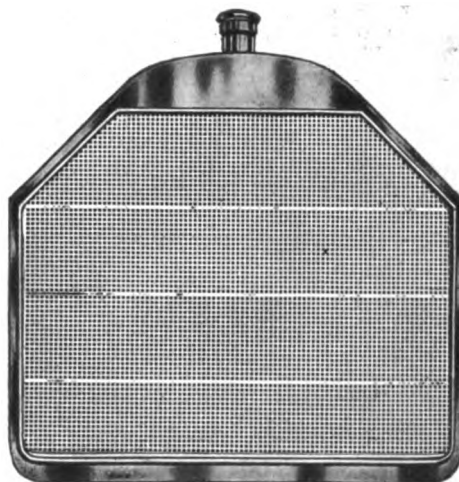
RUST

positively prevented by "3-in-One" on anything indoors or out; keeps everything bright; oils everything right; free from acid.

SQUEAKS

stopped; "3-in-One" oils everything right—locks, clocks, hinges, sewing machines, typewriters; generous free sample sent by Three in One Oil Co., 64 Broadway, New York.

THE BUSH RADIATOR FOR Commercial Vehicles



The **STRONGEST**
Radiator made and
therefore especially
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Truck Service.

Used by many of
the Largest and
Best Known
Manufacturers of
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MANUFACTURED BY
THE BUSH MANUFACTURING COMPANY
Hartford, Conn.

Empire Tires

WEAR LONGEST

EMPIRE TIRE CO., Trenton, N. J.

Regal 30

"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

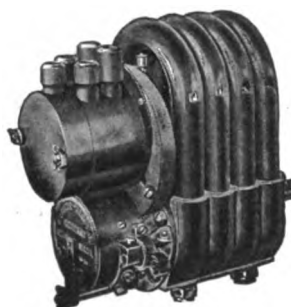
\$1250

Runabout, Baby Tonneau, Touring Car, Coupe
Greatest Automobile Value in America

WRITE FOR OUR LITERATURE

REGAL MOTOR CAR COMPANY, Detroit, Mich.

Heinze High Tension Magneto



Construction—Mechanically unequalled.

Durability—Greater than the life of the car.

Efficiency—Proven by the users.

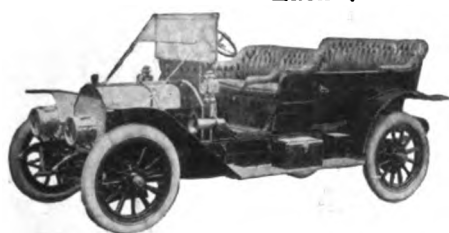
Catalogue H with full information is yours for the asking.

HEINZE ELECTRIC COMPANY
Lowell, Massachusetts

MERCER

TOURING CAR
TOY TONNEAU
SPEEDSTER

Each \$2150



Style, Luxury, Quality, Strength, Speed.

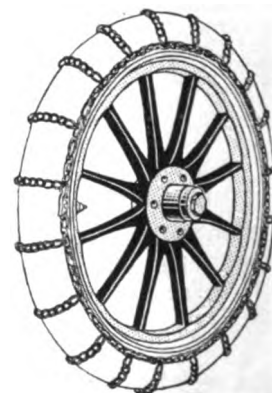
Made Right and Stays Right

Let us hear from you.

MERCER AUTOMOBILE CO., Box 126, Trenton, N. J.

Weed Chains

Wintry weather — muddy roads, slippery pavement. Every car will skid unless you attach WEED CHAINS. They positively prevent skidding.



WEED CHAIN DEPARTMENT
United Manufacturers
250 West 54th St. New York

"Gramm"

THE STRONG POINTS—

Three Point Suspension.

Gramm Multiple Disk Clutch.

Gramm Roller Spring Suspension.

The Gramm Motor Car Co.

101 So. Lima St.

LIMA, OHIO

New York Headquarters—CROSS-MAGILL MOTOR TRUCK CO.,
30 Church St., New York



SIXTEEN
MODELS

Hill Climbers

A most complete line, both pleasure and commercial, ranging in price from \$650 to \$1750.

**A CAR FOR EVERY ARGUMENT
YOUR TERRITORY MAY BE OPEN**

Write today — Desk A

MAYTAG-MASON MOTOR CO., Waterloo, Iowa



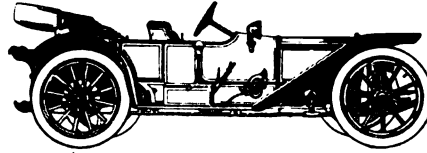
1911 CATALOGUE READY

CORBIN MOTOR VEHICLE CORPORATION
New Britain, Conn., U. S. A.
Licensed under Selden patent.

THE AMERICAN

"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading cities. Increased output this year offers a new opportunity to buyer and dealer alike.



SEMI-TORPEDO TRAVELER

Underlugs frame; 40 in.
wheels; 4 cyl.; 50
H. P., \$4250.

AMERICAN MOTOR CAR CO., Dept. Y, Indianapolis, Ind.
Licensed under Selden patent.

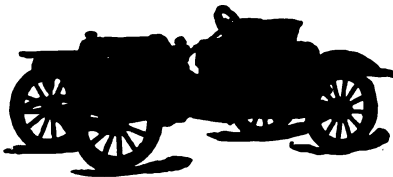


"The car with the invisible start."

96 in. wheel base
32 in. wheels
Sliding gear transmission. Multiple disc clutch. Weight, 1200 lbs.

22½ H. P. \$800

Runabout \$800.
Roadster \$825.
Surrey \$850.



Write for Catalog
K-R-I-T Motor Car Company
DETROIT

\$1,600. Cartercar

Model "L," 4 cylinder, 30-35 H.P., 110 inch wheel base, 5 passenger, Friction Transmission. Chain-in-Oil Drive, any number of speeds, will climb a 50% grade with load, including magneto, gas lamps, generator, horn, mats, tools, jack, etc. \$1,600.

Model "H," 4 cylinder, 25 H.P., 100 inch wheel base, Runabout \$1,100. Double Rumble \$1,125. Double Divided Rear Seat \$1,150. Miniature Tonneau \$1,150.

Write for 1910 catalog.

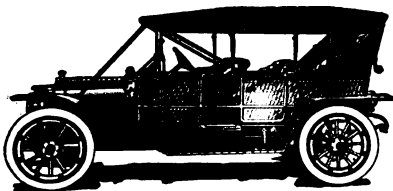
CARTERCAR CO.

Pontiac, Mich.

Licensed Under Selden Patent.



WRITE FOR INFORMATION ABOUT THE SELDEN CAR FOR 1911



The Selden Car stands for every desirable development in the automobile—from the powerful perfectly constructed engine to the evenly balanced quality parts that go to make the finished car.

A wide range of body styles and prices. Roadster, touring and torpedo bodies. New four and six passenger torpedo bodies with fore-doors.

With complete touring equipment, from \$2250 to \$3000

Good territory still open for live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.
GEO. B. SELDEN, Pres. Licensed under Selden patent

THE MARMON

"The Fastest Riding Car in The World"



Closed Front
Touring Car, \$2,750

Holds more long-distance racing records than any car in America.

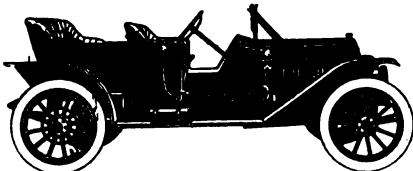
NORDYKE & MARMON CO., Indianapolis, Ind.
(Estab. 1851) Licensed under Selden patent.



Model 51 — \$2200
Model 41 — 1700
Model 38 — 1650
Model 35 — 1250
Model 30 — 1250
Model 25 — 1100

All touring models fitted with removable front doors and panels at a slight extra charge.

Jackson Automobile Co.
Jackson, Mich.
Licensed under Selden Patent



The name and reputation of the HAYNES is your best possible safeguard in the purchase of a high-grade car.

HAYNES AUTOMOBILE COMPANY
Station C KOKOMO, INDIANA
Licensed under Selden patent.

Moline

35 H. P.
112-in. Wheel Base
36-in. Wheels

"King of the Road"

THE latest addition to the "Dreadnought" Moline 1911 Models. Beautifully finished in a rich dark grey, heavy nicked and black enameled trimmings. Price includes zig-zag windshield, five lamps and full kit of tools. Equipped with our famous



Fore Door, \$1700


4 x 6 Long Stroke Motor
with which we won Chicago Trophy in 1910 Glidden Tour and Team Trophy in 1000 mile Chicago run. Write for booklets on both runs and 1911 Catalog

TOURING TYPE, \$1650 TOY TONNEAU, \$1600

Some good territory for live dealers.

MOLINE AUTOMOBILE CO., 61 Keokuk St., E. Moline, Ill.

Warner Gear Co.
MUNCIE, INDIANA

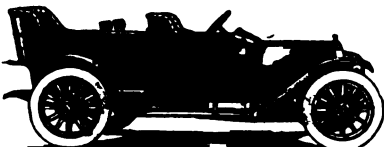


**Steering Gears
Transmissions
Differentials
Clutches and
Control Levers**

MODEL 95—UNIT TRANSMISSION
Brake and Clutch with Raybestos-faced Discs.
25-35 H. P.

Speedwell

YOUR sense of the proportion of value to price will tell you, immediately you see the Speedwell cars, that here is a value more generous than you have found in many another car of higher price. The 1911 literature is ready.



THE SPEEDWELL MOTOR CAR CO.
50 Essex Ave., Dayton, Ohio

MODEL 11-F SPECIAL
7-Passenger Touring Car, \$2,900
5-Passenger Touring Car, \$2,750

The **Paige Detroit** 1911

4 Cycle—4 Cylinder \$800
Full 25 H. P. Motor

Complete specifications and catalogue upon request

THE PAIGE-DETROIT MOTOR CAR CO.
245-255 Twenty-First Street Detroit, Mich.

Baldwin Chains

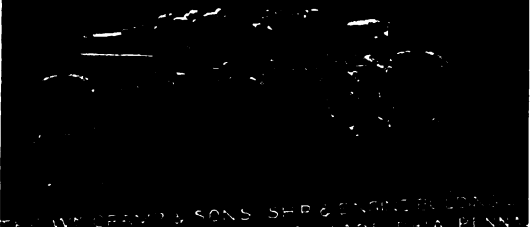


give that kind of service which the buyer has a right to expect from chains which have been chosen because of their well-known quality; accuracy in pitch and durability being especially distinguishing features.

BALDWIN CHAIN & MFG. COMPANY
Worcester, Mass.

SALESMEN—H. V. GREENWOOD, 166 Lake St., Chicago, Ill.; C. J. IVEN, Rochester, N. Y.; M. A. BRYTE, 788 Mission St., San Francisco, Cal.

30,000 MILES WITHOUT ADJUSTMENT
THESE PARSONS WHITE BRASS BEARINGS
HOLD DISTANCE IN A PACKARD CAR. THEY ARE BACK IN
THE CAR WITHOUT EVEN BEING SCRAPPED
STILL RUNNING RUNNING STILL.



**Cramp
—
Metals**

THE W. CRAMP & SONS, SPRINGFIELD, MASS.
100 LAUREL ST., PHILA.

F & S

ANNULAR BALL BEARINGS
(Made in Germany)

The Dependable Kind—

J. S. BRETZ COMPANY
Sole Importers
MOTOR HALL, 250 West 54th St., NEW YORK

STAYER-CHICAGO

We have a dealers' proposition for 1911 decidedly different, because it was planned from the dealers' standpoint. It means a great car with a 100% perfect selling plan and a price proposition in a class by itself.

30, 35 and 40 h. p. cars—\$1450 to \$2000. Dealers everywhere are investigating. How about you?

STAYER CARRIAGE COMPANY
Dept. 9012 76th and Wallace Sts., CHICAGO

SERVICE and SATISFACTION

are assured when

G & J TIRES

are used.

G & J TIRE CO., Indianapolis, Ind.
We Sell Continental Demountable Rims.

Packard

CABLE

Is
Abso-
lutely
Sure

Don't take chances on the wiring of your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

Just put on Packard Cable and forget all about your ignition troubles
NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY

Send for samples and prices before ordering elsewhere
THE PACKARD ELECTRIC CO., 4328 Dana Ave., Warren, O.



**DO YOU WANT
DIE CASTINGS FREE**

from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?

Van Wagner makes that kind.

Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. **WRITE US.**

E. B. Van Wagner Mfg. Co., 706 Union Bldg
SYRACUSE, N. Y.

GLASSO

PREVENTS FOGGY WIND SHIELDS



Rub a little GLASSO on your wind shield and you are sure of a clear vision. Rain, snow or mist slides off glass that has been polished with GLASSO like water off a duck's back.

Glasso used **Glasso not used**

A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasso will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

THE GLASSO COMPANY
Motor Car Equipment Co., Distributors
55A WARREN STREET NEW YORK

Pressed Steel Step Hangers



With ears
for attaching
mud apron.

These cuts show only two of the various styles of heads we can furnish. Our dies are so constructed that we can make these hangers with almost any drop or extension desired. Made from 3-32 inch steel—lighter and stronger than forgings.

Samples or blue prints cheerfully
furnished on request.

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PROMPT DELIVERY**

The Bossert Co.
UTICA, N. Y.



Plain
pattern.



DIAMOND CHAINS

are and have been the recognized quality standard for 20 years. Strong, accurate and durable. Let us cut your sprockets.

DIAMOND CHAIN & MFG. CO.
150 W. Georgia St. Indianapolis, Ind.
Capacity 8,000,000 feet per year.

PRESSED STEEL

Automobile Frames

Running Boards

AND

General Stampings

THE PARISH & BINGHAM CO., Cleveland, Ohio

ARNOLD ALARM

The Perfect Electric Signal for
Automobiles and Motor Boats

Send for Special Offer. The best retailers
proposition ever presented. Send now.

STANDARD ELECTRIC WORKS, Dept. H, Racine, Wis.

MONEY SAVERS AND MONEY GETTERS

Atterbury Commercial Wagons and Trucks

FULL INFORMATION UPON APPLICATION

WE make vehicles for any kind of business, guarantee efficient service and as one of the oldest makers of commercial power-wagons our product is a known and fixed quantity. We can interest any merchant interested in effecting a business economy.

ATTERBURY MOTOR CAR COMPANY, Buffalo, N. Y.

LEST YOU FORGET

Write today for copy
1911 Catalog. Missing
means losing.

Ford Motor Company DETROIT, MICH.

MAXWELL CARS

1911 Line

Model E. A. Touring Car,	4-cylinder,	30 h. p.,	price, \$1350
Model G. A. " "	4 " "	30 " "	1350
Model G. A. Roadster,	4 " "	30 " "	1350
Model I Touring Car,	4 " "	25 " "	950
Model Q-11 Runabout	4 " "	22 " "	750
Model Q-3-11 Touring Car,	4 " "	22 " "	800
Model A. B. Runabout,	2 " "	16 " "	600

Maxwell-Briscoe Motor Co.

Licensed under Selden patent.

VALE STREET

TARRYTOWN, N. Y.

THE 1911 OWEN

The 1911 OWEN BERLIN represents the highest development of closed car construction. It is the embodiment of comfort with exclusive features affording greater convenience than can be enjoyed in other cars. The easy running qualities of the OWEN BERLIN are unequalled because of large wheels, OWEN spring suspension and minimum vibration from the long stroke motor. Combining these features with interior appointments of the most luxurious character, the OWEN BERLIN (seating six) is a car certain to please the most exacting.

Catalog and detailed descriptive matter sent upon request.

OWEN MOTOR CAR COMPANY

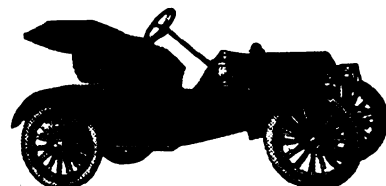
1620 East Grand Boulevard

DETROIT, MICH.

Metz 1911 Runabout

Every car fully equipped
exactly as shown

\$485



EQUIPMENT—Bosch magneto, top and slip cover, gas lamps and generator, oil lamps, horn, 28 x 3 standard clincher tires, and set of tools.

GOOD DEALERS WANTED IN UNOCCUPIED TERRITORY.

METZ COMPANY, Waltham, Mass.

VULCAN GEAR WORKS

PONTIAC MICHIGAN

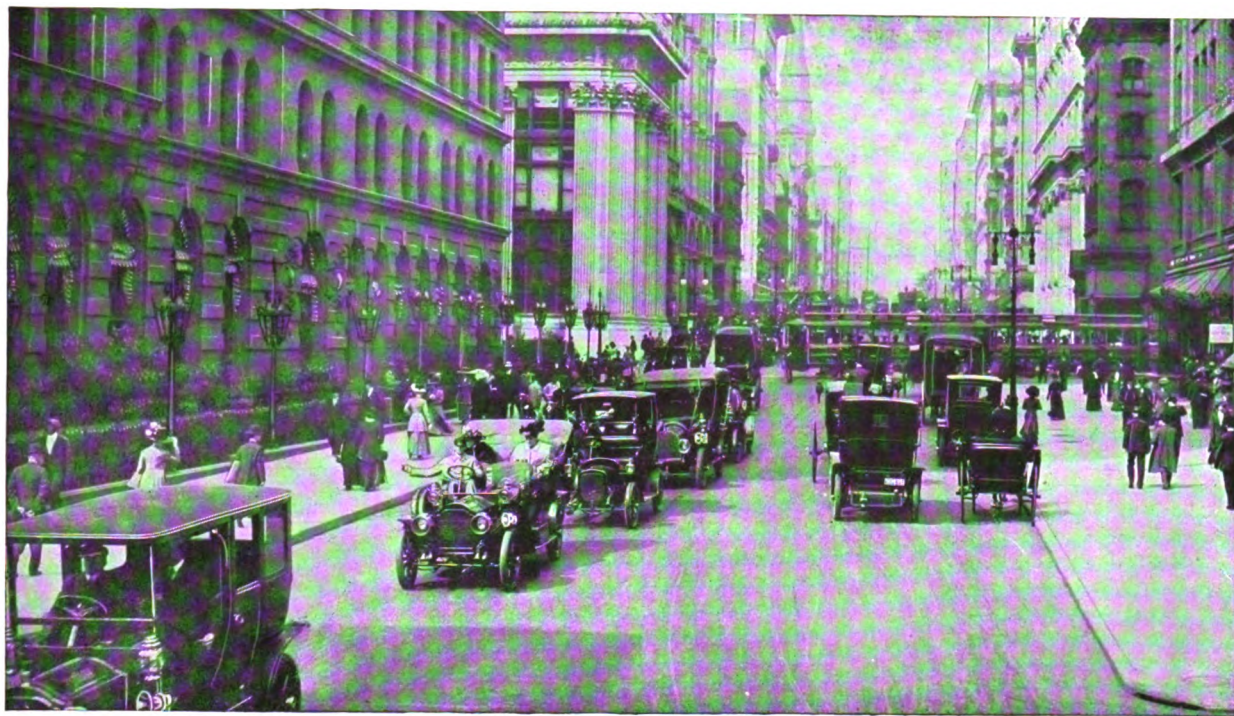
MANUFACTURERS OF CUT GEARS



Automobile Gears a Specialty

DIFFERENTIALS — TRANSMISSIONS — STEERING GEARS

SEND BLUE PRINTS FOR QUOTATION

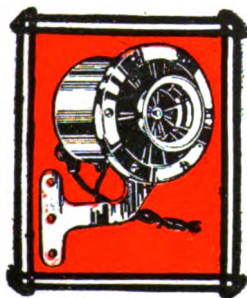


The KLAXON is a Sign of Motor Car Quality

Wherever you go you will find that a majority of the best cars are equipped with Klaxon warning signals.—

And you will also find that the owners of these cars represent the most conservative and best citizens of the community.

It is true, therefore, that the Klaxon has come to be an unmistakable token of motoring quality and conservatism.



KLAXONET

LOVELL-McCONNELL MFG. CO., Newark, N. J.

KLAXON

"The Public Safety Signal"



KLAXON



THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

Licensed under Selden patent.

THE MOTOR WORLD

A trade paper giving the
World's Motor News

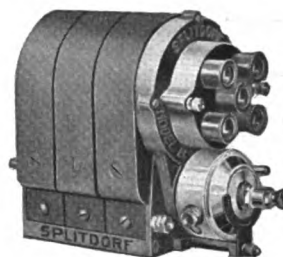
Ten cents a copy—
Two dollars a year



SPLITDORF

Sheer Force
of Merit

is the great factor in the
phenomenal growth in
production and use of the SPLITDORF
Magneto.



There are thousands of SPLITDORF
equipped cars whose owners will tell you
that they have the most Perfect Ignition
possible every day in the year.

C. F. SPLITDORF

Walton Avenue and 138th Street

Branch, 1679 Broadway

NEW YORK

M
A
G
N
E
T
O

QUALITY

**Explains why there are
five times as many
Stewart Speedometers
sold as all
other makes
combined.**

**45 car manufacturers are
using the beautiful 1911
Stewart Speedometer as
standard or special equip-
ment on their cars.**

**You can't go wrong
if you buy a Stewart.**

SEND FOR CATALOGUE

Stewart & Clark Manufacturing Company

1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
New York: 1878 Broadway
Chicago: 1312 Michigan Avenue



**Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years**

San Francisco: 307 Golden Gate Avenue
Los Angeles: 1212 South Main Street
Philadelphia: 608-10 North Broad Street

Announcement of the

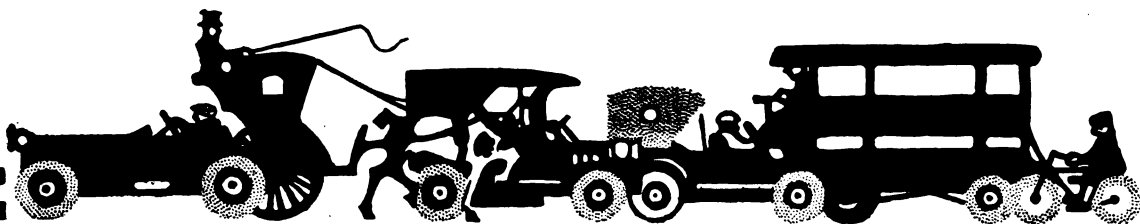


**What it is and how
it is to benefit every dealer, user and
manufacturer of motor cars in America**

A BRIEF STATEMENT OF THE FACTS

FOUR of the most prominent tire makers in the country have joined hands, forming the largest and best equipped tire company now in existence—the United States Tire Company. Beginning March first, this new organization, composed of the Continental Caoutchouc Company of New York, the G & J Tire Company of Indianapolis, Ind., the Hartford Rubber Works Company of Hartford, and Morgan & Wright of Detroit, will handle the products of the four named companies.

The four factories and the four brand names will remain the same. The dealers' relations with the four companies will remain practically as before. The change will be in the improvement of tire quality made possible by uniting the manufacturing methods, secrets and experience of the world's best known tire makers, and the distinct advantage, from both the manufacturers' and dealers' standpoint, of five plants distributed throughout the country.



Announcement Page 2

The United States Tire Company's Message to Dealers

IT is fortunate both from our standpoint and from that of the trade that this new company is composed entirely of the men who have for years handled the affairs of the four individual companies. No dealer who has ever dealt with any one of the four separate companies will need an introduction to the new organization.

The pronounced friendliness of the trade towards these companies developed through years of mutual fair dealing is an extremely valuable asset and one we highly prize.

With two or three exceptions the trade relations with the new company will remain the same as heretofore. All four brands of products will remain the same except that a combination of the facilities and secret processes of manufacturing, heretofore possessed individually by each company, will now be utilized in making all United States tires. These advantages will naturally result in an increased demand for all United States products, to the direct profit of every dealer who handles them.

Three district branches have been established. One in New York for the Eastern district, one in Chicago for the Central district and a third in San Francisco for the Western district. Through these three district offices all the business of the company will be transacted.

The distributing facilities of the new organization are unapproached by any other company in existence. In addition to five immense factories, direct factory branches and agencies are established in every large city in the country.

This organization, complete to the last detail in both the manufacturing and distributing departments, will work for closer and more profitable relations between ourselves and the trade, than would ever be possible with a single company's manufacturing and distributing facilities.

Announcement Page 3

How the formation of The United States Tire Company will benefit the Motorist

EVERY logical minded tire user will readily admit that, given an equally high grade of fabric and crude rubber, tire quality and tire mileage is directly proportionate to the amount of brains and experience put into tire making.

Laying aside the advantages our immense purchasing power will give—enabling us to command the choice of the world's finest rubbers and fabrics;

Laying aside the manufacturing improvements and economies that will result from enormous production (our four plants will turn out nearly three-quarters of a million tires during the coming year);

Even granting, for the sake of argument, to smaller separate concerns equality in these respects, this fact will still strike every fair-minded buyer of tires with convincing force—United States tires are the product not of a single company's comparatively limited facilities and experience, but they are the product of the combined brains, manufacturing secrets and long experience of four of the world's best known tire makers. They unite the best features of the tires made by all four companies.

This combining of the most highly prized and carefully guarded secrets of the rubber industry to-day will produce a tire that will give the greatest mileage that it is possible to obtain from a combination of rubber and fabric.

All four tires will still be sold under the old brand names. Buy any one you favor. As long as it is a United States tire you will get more tire value for your money than you possibly could from a company with comparatively limited facilities and with only a single company's knowledge of the best methods of tire manufacturing.

The combined selling equipment of the four companies will be at the service of United States tire users. Five factories, branches, agencies in every large city of the country and over four thousand distributors will look after their wants. No matter where, when, or what your tire need, a United States dealer can supply it.

Announcement Page 4

United States Tires

The most complete line of types and treads ever offered for the motorist's selection



PLAIN BAILEY MIDGLEY NOBBY TRAXION TYPE COURSE STEEL STUD SPECIAL ELECTRIC

Select any style you fancy, with the assurance that the quality is UNIFORMLY SUPERIOR

The greatest opportunity ever offered to dealers in automobile tires

OVER four thousand of the most progressive dealers in the country, now handling the four makes of tires, will on March first become United States dealers. They will begin to reap the benefits of the country-wide advertising campaign we will inaugurate on that date. This will be the most extensive campaign ever attempted by a tire manufacturer.

Full pages in newspapers, trade papers, farm papers and magazines will, time after time, carry the message of United States tires and United States dealers to every car owner between the coasts.

We present an opportunity to every big dealer in the country—big not necessarily in business or capital, but large in ability to do big things. We want more of such dealers to help handle the increased demand for United States tires in localities where we are not now adequately represented.

If you are prepared to join us, let us know who you are and where you are, on the attached coupon.

United States Tire Company

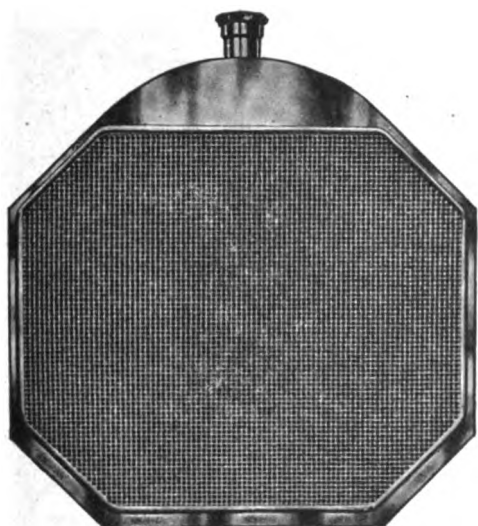
Broadway and 58th Street, New York

**United
States
Tire Company
New York**

*Gentlemen: Kindly
send me your complete
dealers' proposition.*

Name

Address



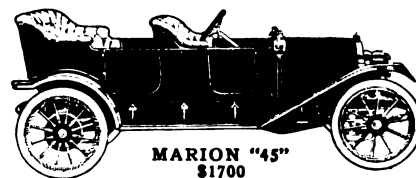
The Mayo—the radiator thoroughbred

¶ No amount of talk can compensate for lack of worth.

¶ The use of Mayo Radiators is eloquent of the general character of the car.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

Marion



The Marion is Strong in Every Detail

¶ Every part is a feature. There is no chance for something to put something else out of work, and start a general derangement. All parts of the MARION work in harmony. In the MARION you get precision and sureness because of a correct relation of working members.

¶ Ask some seasoned owner about his experience in running a car, about what has happened to him, about the times he has been stranded, about what caused him trouble and expense.

¶ You will find out sooner or later that you must be wary of cars sold on the strength of a few special features—a special axle construction, or crank shaft or clutch. Because a few special features such as these can equal the best in the world and still the rest of the car will handicap them and surely bring them to grief.

¶ Now—what have we been insisting upon in regard to MARION quality right along? What have we been planning and working on for years? A car, sound, true, absolute down to the thousandth part. Every part is a masterpiece—motor, clutch, universal joint, transmission, gears, axles, wheels, frame and right on to the most insignificant bolt or nut. These perfections have been contributed by the best thousand men in the motor car industry.

¶ At \$1150 or \$1700, the MARION 1911 models are the first choice of a great many experts. If given a fair chance your judgment will agree.

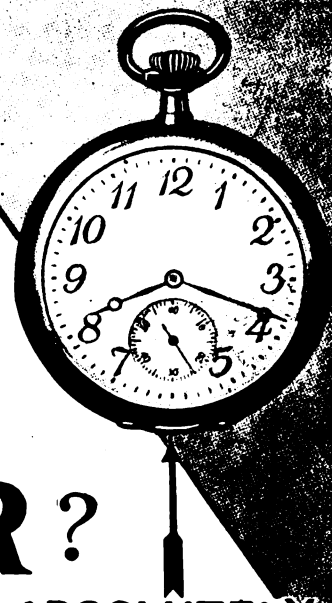
THE MARION SALES COMPANY, Indianapolis, Ind.

A CHEAP WATCH



INACCURATE

A CHRONOMETER

ABSOLUTELY
ACCURATE

**WHICH
DO YOU
PREFER?**

You can purchase an inaccurate watch at a "cheap" price. You can buy an accurate, reliable watch at a fair price. Which do you prefer—accuracy or guesswork? Same thing with speed-indicators.

Jones Speedometer

is absolutely accurate—as accurate, as thoroughly reliable as a fine chronometer. It's an instrument of precision built by skilled watchmakers on the accurate principle—Centrifugal Force. The Jones can be depended upon—thoroughly reliable under all conditions. You're mighty careful about the accuracy of your watch. Observe the same care in the selection of a speedometer. Don't buy "guesswork"—don't buy inaccuracy. Get the JONES for your car and be sure.

The Jones is absolutely impervious to heat, cold or electrical influence—it's "Geared-to-the-Truth"



Handsome in design and finish. An ornament to any car—it's the "class" of all the speedometers.

JONES SPEEDOMETER DEPT.,—UNITED MANUFACTURERS
250 West 54th Street, New York

ADJUSTABLE

Bearings Have Superior Advantages
Over All Other Anti-Friction Bearings.

Timken Roller Bearings

are designed with the principle in mind that all moving bearing surfaces
DO WEAR.

❧ Other types—such as plain, straight or parallel roller, and annular ball bearings—are non-adjustable.

❧ Hence, the slightest wear not only means rapid deterioration and early replacement, but also is communicated to other parts—gears, etc.—that are dependent upon shaft alignment.



Timken Roller Bearings

provide adjustability to start anew after even the slightest wear, and, The tapered carrying contact also provides an equal capacity for side loads.

❧ THE ONLY COMBINED RADIAL AND END THRUST BEARING, that has been absolutely proven, is produced by

THE TIMKEN ROLLER BEARING CO.

CANTON, OHIO, U. S. A.

No Nuts

No Bolts

No Clamps

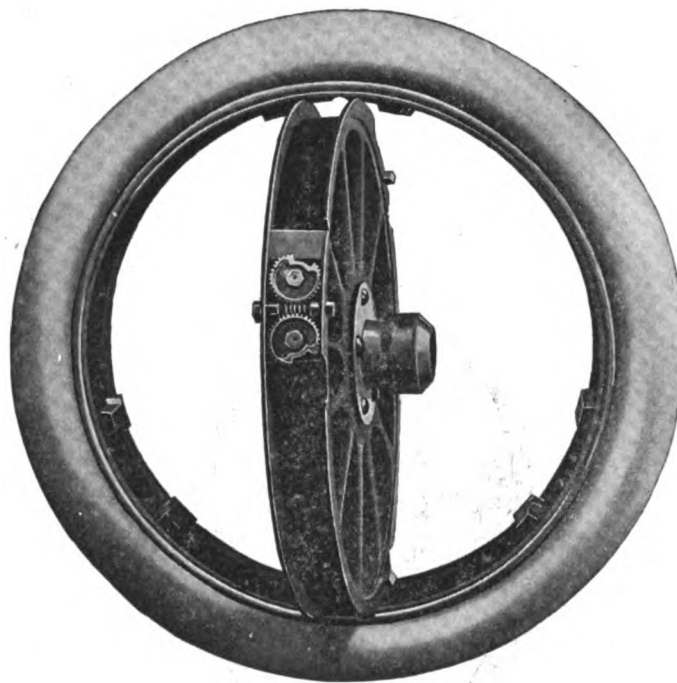
No Junk

No Bunk

Adopted as standard equipment on **all Benz** cars.

Owners of **Peerless, Packard, Pierce-Arrow, Lozier, Chalmers, Cadillac, Benz, Pope-Hartford, Winton** and many other makes of cars are ordering us to equip their individual cars with our **Demountable Rims**, and in a great many instances are specifying them when ordering new cars.

We manufacture our own device and **guaran-**



tee it for life not to be affected by any weather conditions.

Nothing to lose in the sand, dirt or snow. Just mechanically comes off and is mechanically forced on again.

Designed originally as a demountable rim to do away with tire trouble, and for use especially on pleasure cars, it has since developed to the safest, simplest and quickest demountable ever produced.

I consider the Booth perfect, and use them exclusively on all my cars. —BARNEY OLDFIELD.

It's a Booth! That's all you need know about a demountable rim. All engineers or any convention of engineers invited to prove that our rim is not mechanically perfect.



The Booth Demountable Rim Co.

CLEVELAND, OHIO

Little Chapters of Quality

Chapter the First

The word "Quality" is full of mystery or full of meaning. It earns its significance solely from the product to which it is applied.

"Quality" is never an accident—never just happens. It begins with a definite ideal—a well founded determination to build the best—backed up by the equipment, the organization, the capital, and the "Know-how".

You automatically think of "Quality" in connection with Timken-Detroit Axles. There instantly flashes across your mind the vision of a well nigh perfect product, safeguarded at every step of manufacture by skill and experience, by rigid chemical and physical tests—a product built to such a high standard that you find it on the best cars.

"Once a Timken-Detroit customer—always a Timken-Detroit customer," is not merely a saying but a fact.

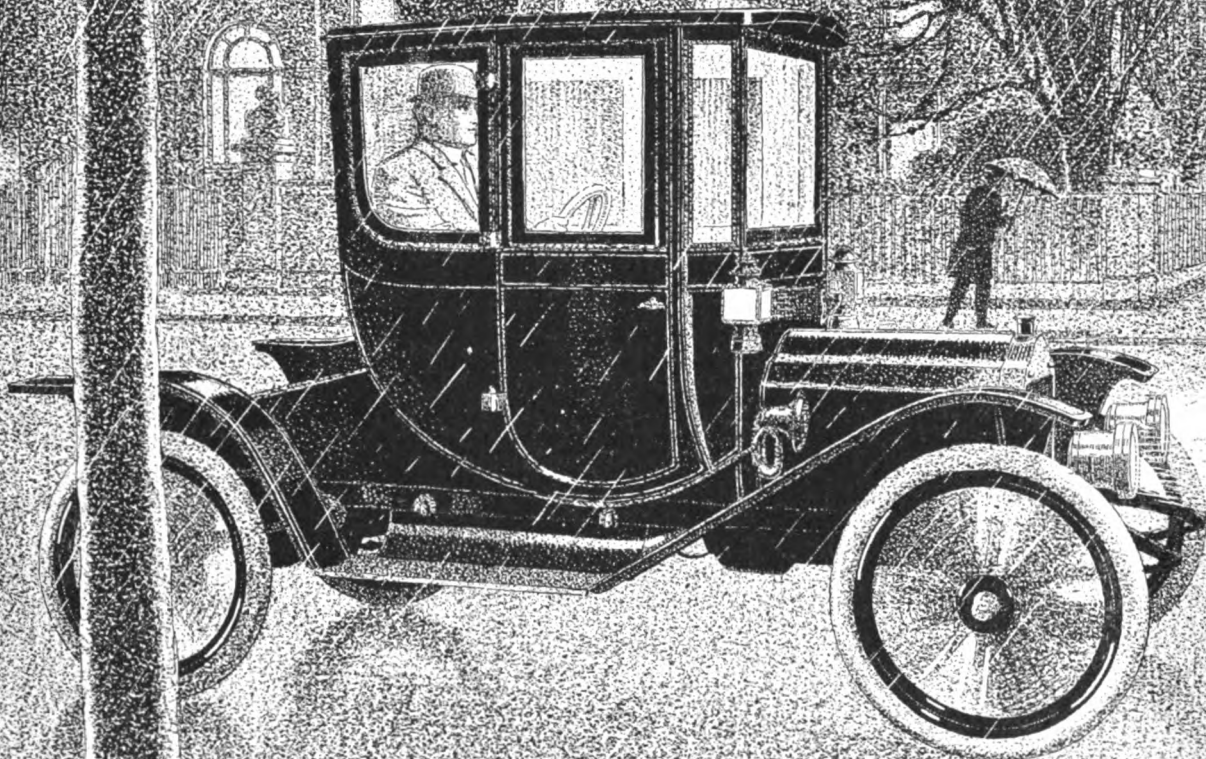
Supposing you write

The Timken-Detroit Axle Co.

Detroit, Michigan, U. S. A.



Flanders 20 Coupe \$975



Office Comfort on Wheels for \$975

The Flanders "20" Coupe will convey you through city streets and across country roads at all hours and in all sorts of weather accompanied by every comfort of your home. This Coupe is luxuriously equipped, is finished in dark green enamel with nicked trimmings, has English Broadcloth upholstery, and is fitted with interior and exterior electric lights. Mounted on the standard Flanders "20" chassis this body is interchangeable with the Runabout Suburban and Roadster type of body for summer service.

The E-M-F Company
Automobile Manufacturers, Detroit, Mich.

Franklin Commercial Cars



"Our Franklin truck has run 12,000 miles, original casings still on and going every day."—Ballard Transfer and Storage Company, St. Paul, Minn.

"Have run my truck 9,281 miles since last May and no tire trouble."—P. E. Simmons, Portland, Me.

Reports of tire service from operators of pneumatic-tired Franklin trucks show an average of 2,740 miles without a puncture. Total mileage is greatly in excess of that ever obtained from the use of solid tires.

Pneumatic tires on Franklin air-cooled trucks increase efficiency one hundred per cent and decrease cost of operation fifty per cent as compared with the results obtained from solid-tired trucks.

They increase efficiency by allowing a high average speed to be maintained—capacity loads being moved much quicker with a pneumatic-tired Franklin truck than with any truck using solid tires.

They reduce cost of operation because

even when the truck is being driven at a high rate of speed there is much less jar and vibration than with a solid-tired truck running at half the speed.

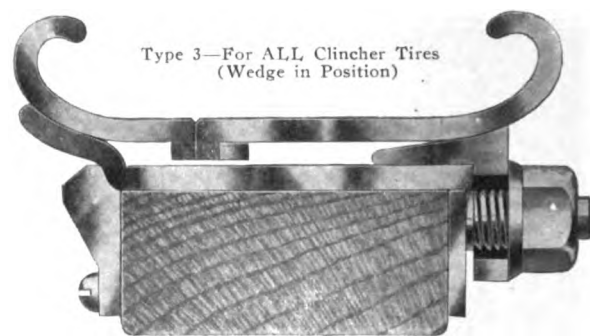
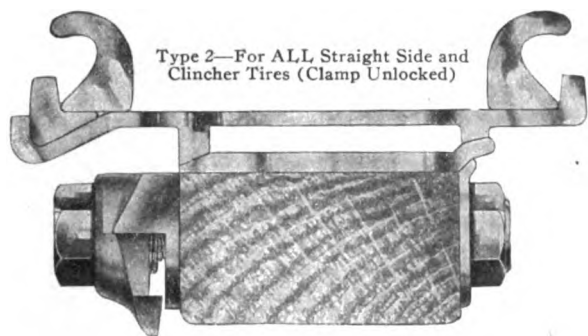
Franklin air cooling is the most reliable and at the same time the simplest cooling system that can be obtained for motor trucks.

It is the most reliable because it cools perfectly under the hardest and most continuous running.

Where the water-cooled truck can easily be disabled by the carelessness of the operator the air-cooled system of the Franklin is absolutely independent of attention.

Write for the Franklin Commercial Car Catalogue. The Franklin line includes stake platform and express body trucks, taxicabs, passenger 'buses, police patrols, a light delivery wagon and an ambulance.

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y



STANDARDIZATION OF RIMS

that benefits

CAR BUILDERS—TIRE MAKERS—CAR OWNERS

The Standard Universal Quick Detachable Demountable Rims

"FIT ALL TIRES"

and

Solve the Problem of Interchangeability

25,000 sets of Demountable Rims and 135,000 sets of Quick Detachable Rims, practically 96 per cent. of the total number of Rims made in the United States, have been contracted for by the following manufacturers:

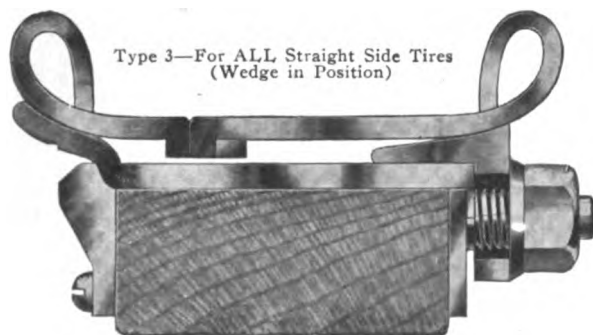
Aeme Motor Car Co., The
American Locomotive Co.
American Motor Car Co.
Anderson Carriage Co.
Argo Electric Vehicle Co.
Ashland Auto Co.
Atlas Motor Car Co.
Atwood Auto Co.
Auburn Auto Co.
Austin Auto Co.
Auto Car Co.
Badger Motor Car Co.
Baker Motor Vehicle Co.
Bartholomew Co., The
Bergdoll, L. J., Motor Co.
Borbein Auto Co.
Broe Electric Carriage Co.
Buick Motor Co.
Burg, The L., Carriage Co.
Cadillac Motor Car Co.

Canada Cycle & Motor Co.
Carhartt Auto Corp.
Chalmers Motor Co.
Columbia Motor Car Co.
Cook Auto & Carriage Co.
Corbin Motor Vehicle Corp.
Cunningham, Jas., Son & Co.
Davis, Geo. W., Carriage Co.
Dayton Motor Car Co.
Dietrich Motor Car Co.
E-M-F Co.
Ellis Motor Car Co.
Elmore Mfg. Co.
Fiat Auto Co.
Franklin, H. H., Mfg. Co.
G & J Tire Co.
Gabriel Auto Co.
Garford Co., The
Gramm Motor Car Co.
Great Southern Auto Co.

Grout Auto Co.
Hartford Rubber Works Co.
Hayes Wheel Co.
Hol Tan Co.
Hudson Motor Car Co.
Imperial Wheel Co.
International Harvester Co.
Inter-State Auto Co.
Jeffery, Thos. B., Co.
Johnson Service Co.
Kissel Motor Car Co.
Lexington Motor Car Co.
Locomobile Co.
Lozier Motor Car Co.
Luverne Auto Co.
McFarlan Motor Car Co.
McLaughlin Motor Car Co.
Mann-Aldrich Carriage Co.
Marion Motor Co.
Maxwell-Briscoe Motor Co.

Michigan Buggy Co.
Middleby Auto Co.
Mitchell-Lewis Motor Co.
Moline Auto Co.
Moon Motor Car Co.
Moyer, H. A.
Morgan & Wright
National Motor Vehicle Co.
Nordyke & Marmon Co.
Oakland Motor Car Co.
Olds Motor Works
Overholt Co.
Packard Motor Car Co.
Paterson, W. A., & Co.
Peerless Motor Car Co.
Pierce-Arrow Motor Car Co.
Pence Auto Co.
Pope Mfg. Co.
Premier Motor Mfg. Co.
Prudden & Co.

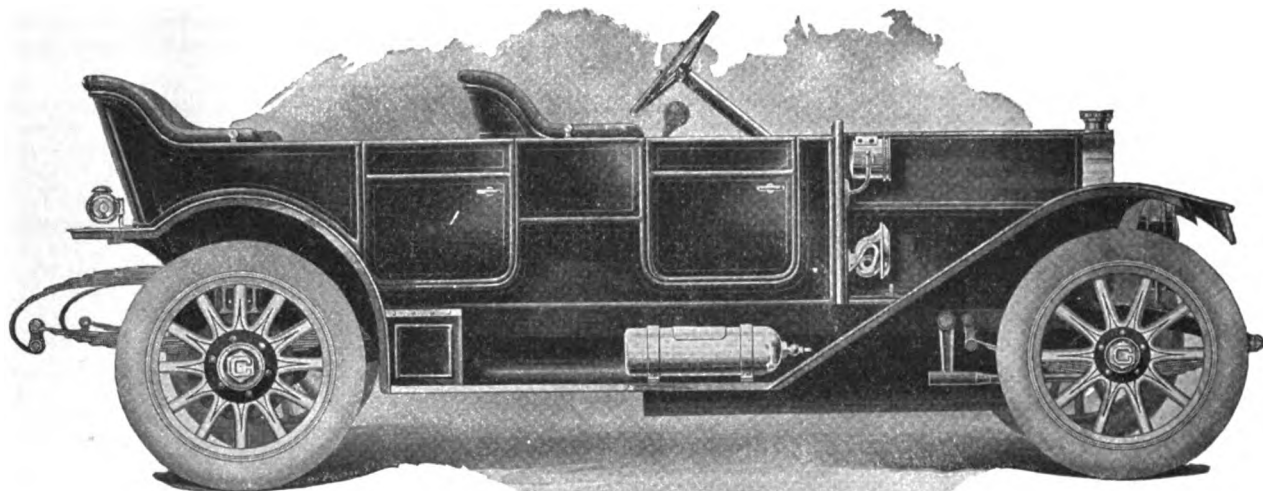
Pullman Motor Car Co.
Rauch & Lang Carriage Co.
Richmond Iron Works Corp.
Schacht Motor Co.
Selden Motor Vehicle Co.
Simplex Auto Co.
Stanley Motor Carriage Co.
Stearns, F. B., Co.
Stevens-Duryea Co.
Streator Motor Car Co.
Studebaker Auto Co.
Thomas, The E. R., Motor Co.
Traveller Auto Co.
Vellie Motor Vehicle Co.
Waverley Co., The
Westcott Motor Car Co.
White Co., The
Willys-Overland Co.
Winton Motor Carriage Co.



Write for illustrated
descriptive matter.

**The
United Rim
Company**
AKRON, OHIO





Model H 5 Passenger Fore Door Touring Car—\$1750

COLBY

Built to Compete with \$3000 Cars

We wish to extend our thanks to the experts and others who have been so pronounced in proclaiming the Colby "40" the best motor car ever put on the market selling for less than \$2500.

It easily develops 5 to 50 miles an hour without overworking the motor, or causing any unpleasant vibration of the car.

The Colby is designed for comfort, as well as appearance, having the grace and beauty only found in high priced cars.

In our construction, we have used only the very best workmanship and material throughout. A glance at our specifications will prove it. Compare them with cars selling for three thousand and more.

We would be pleased to have the most skeptical call at our exhibit and be convinced.

SPECIFICATIONS

Body: Standard touring straight line.
Seating capacity, five. Fore-doors.
Motor: Four Cylinder—H. P., 35-40.
Bore, $4\frac{1}{4}$; stroke, $5\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.
Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.
Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system.
Carburation: Carburetor—special fuel feed—gravity.
Clutch: Type—multiple disc. Friction surfaces—steel to steel.
Gearset: Selective—located amidship. Three speeds forward.
Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.
Bearings: Crankshaft—three large. Plain. Camshaft—three, plain. Clutch

—spindle, plain. Clutch, thrust, ball.
Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball.
Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white bronze.
Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36 x 4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type.

Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.

Demountable Rims:

Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.

Control: Hand levers on steering wheel and foot accelerator.
Price: \$1,750, f. o. b. Mason City.

COLBY MOTOR CAR COMPANY, Mason City, Iowa

New York Representative—EMPIRE CITY AUTOMOBILE CO., 1800 Broadway.

By far the most conspicuous car in the high-price division is the Cunningham, made by James Cunningham & Co., big carriage builders at Rochester for over seventy years—N. Y. Mail.

At no Automobile Show before has one car caused so much comment and so completely pre-

The Cunningham car made in Rochester, and sold in New York by the Whiting Motor Company at 1802 Broadway, is one of the real interesting touring car exhibits, and a crowd is to be found at all times around the Cunningham chassis.—N. Y. Globe.

dominated the field as the Cunningham at the Palace Show in New York.

Any one familiar with automobile construction cannot fail to realize even after a cursory examination, why this is true. The

Cunningham

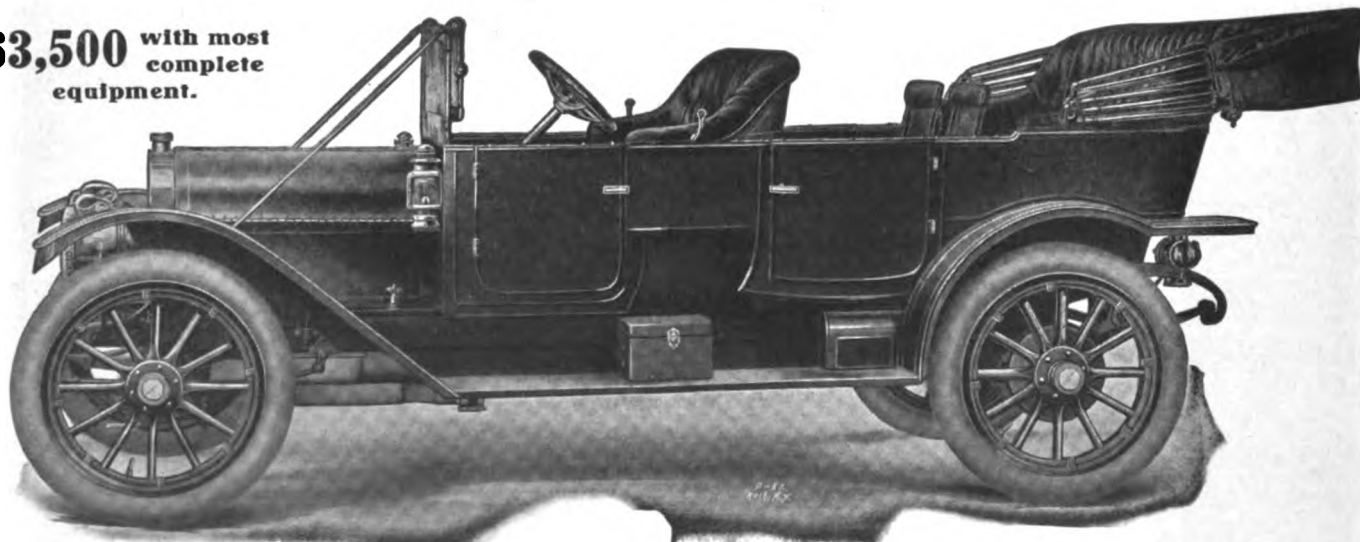
Car, in no feature, is an innovation or an experiment.

It is such a masterful and clever combination of the up-to-date and accepted practice that it completely eclipses everything in its field.

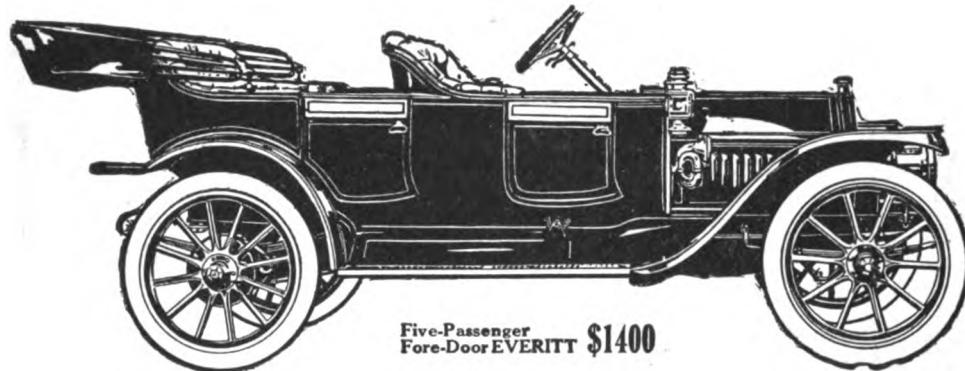
This is a pretty strong statement, but as the most extravagant claims The Cunningham Company can possibly make have already appeared in print, editorially, written by the best posted writers on the subject, it does not seem to be out of place to repeat and emphasize these facts.

JAMES CUNNINGHAM, SON & CO., Desk D, 16 Canal Street, Rochester, N. Y.
Chicago Branch, 2021 Michigan Ave.

\$3,500 with most complete equipment.



Any Dealer Who Can Sell Cars At All, Can Sell the "EVERITT"—The Car That People Want



Five-Passenger
Fore-Door EVERITT \$1400

**Built Throughout In One Factory, Under the Personal Supervision of Experts,
and Around the Ideas of a Hundred Dealers, The EVERITT is a Car
You Can Stand Back of, for It Will Stand Back of You.**

Unless you have investigated the "Everitt" you don't know how good a medium priced automobile can be.

This car is built throughout in our shops, by skilled mechanics, directly supervised by men who have manufactured many thousand automobiles of well-known names. Its mechanical design is the concentration of ten years' experience, and the ideas of a hundred big dealers from Maine to California, expressed in the work of three men who have been building motor cars since 1908.

Few people realize the manufacturing facilities behind the "Everitt," and the high quality of every detail that goes into it.

Every gear in the car, for instance, is cut and heat-treated in our own shops. The steel used is equal to that in a \$4,000 car. It is impossible to buy at any price, ready-made gears of the quality we use.

A Splendidly Equipped Factory.

The "Everitt" factory is completely equipped for the manufacture of every detailed part of the car.

to be found in the country, with exact Jigs and Fixtures for every detailed part. 782 Jigs are used in the making of this car,—every one exact to the one-thousandth of an inch.

Over all this mechanical department is a superintendent of rare genius, with picked foremen and mechanics who have built good cars for years. And every one of the three manufacturers behind the "Everitt" is a *practical mechanic*, capable of running any machine in the shop.

No Other Car Like This.

Look over every car on the market within \$500. of the "Everitt" price, and you will find there is nothing to compare with it in detail.

Note its Double Drop Frame; Long Stroke Motor; Low Center of Gravity; Light Weight; Big Tire Allowance; Honey Comb Radiator; Large Wheels and Nickel Steel Gears.

Observe the Motor Simplicity—156 less parts than its nearest competitor,—Deep Body Upholstering with Best Quality Hand-

THE "EVERITT 30"

Last year we had orders for 4,000 "Everitts." We could have supplied these, had we "assembled," as others were doing, but it was determined that every "Everitt" should be entirely manufactured and "jigged" in the one factory.

Consequently, only 900 cars were put out. It takes time to install and get into operation a million-dollar *manufacturing* plant like this. But today the factory is ready, and we are now able to devote our whole attention to getting out the cars.

We now have in full operation, for instance, our own great gangs of Multiple Drills, our own giant Shapers and Planers, Gleason Gear Cutters, Brown & Sharp Automatic Screw Machines and Ingersoll Multiple Millers and Boring and Grinding Machines.

We have our own Steel Department, with huge Bake Ovens for Heat-Treating Steels, our own Electric Welding Machines, and our own Body Plant.

We have one of the most complete "Auxiliary Equipments"

Buffed Leather; the Low Hung Body, and Strong, Easy Springs; the Stylish Body Designs; and Wide Seats and Doors.

Remember that every mechanical part is absolutely interchangeable—made to jig—and of the best stock that money can buy.

Try this splendid car for yourself on the road and you will understand why every owner of an "Everitt" is a constant advertisement.

We want more dealers—real representatives who can make buyers understand how good this car is. We want men who appreciate a car built right throughout, and who will push it.

To such we can offer an attractive agency proposition, an absolutely square deal, a liberal factory policy and a car that has made good.

There is considerable unallotted territory for the "Everitt." Write us direct for our proposition.

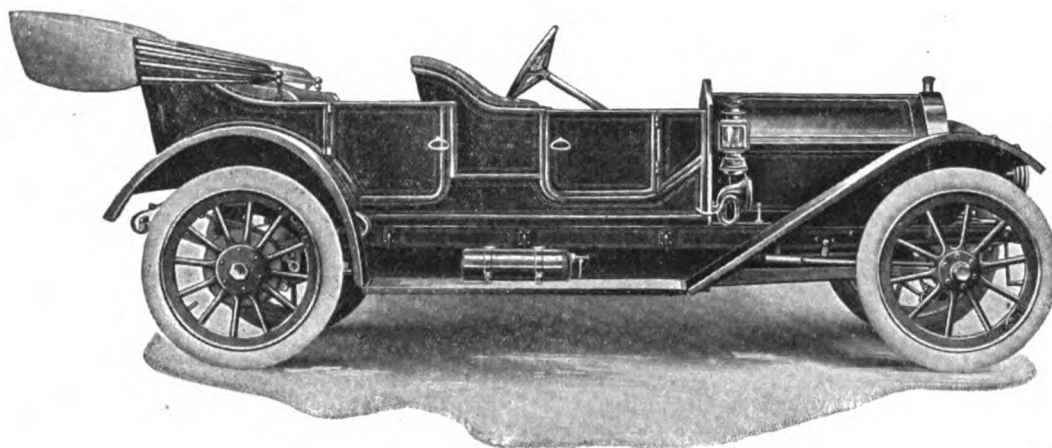
METZGER MOTOR CAR CO.

Manufacturers of *The "EVERITT 30"*
and HEWITT TRUCKS

DETROIT, MICH.

A New Pace in Motor Car Values Has Been Made By The

McFARLAN SIX 1911



Big Six Model 32, price complete, with Fore Doors and Mohair Top, \$2500; 128-inch Wheel Base, 36-inch Wheels, Unit Power Plant, Multiple Disc Clutch 50 to 60 H. P. Cylinders, 4 x 5. Same Chassis fitted with Runabout Type Body, Fore Doors, Mohair Top, complete, \$2500. We also make a Touring Car, 6-Cylinder, 3 $\frac{5}{8}$ x 4, 35 to 40 H. P., complete with Top, \$2100. Runabout, same Chassis, \$2000.

The man today who measures motor car values by the standards set by the popular priced, widely advertised four cylinder cars of 1908, 1909 and 1910, will discover to his profit, if he will investigate, that a new era in construction and a new era in values was ushered in some time ago by The McFarlan Six.

A little investigation will prove for instance that you can buy a McFarlan Six for practically the same money a popular priced four costs.

And this doesn't mean a car "skimped" and cheapened to meet a price. It means a highly developed, highly finished, high powered car, made of the very best materials and designed right up to the minute.

Any dealer, or prospective buyer, who will write for our literature, will readily recognize after reading that the McFarlan Six is the greatest motor car value in the market.

The New York Sun of January 2 commenting on the Automobile Show exhibit says of the McFarlan:

The Big Six and Little Six McFarlan cars come in for a great deal of notice. On the big car the foredoors are removable. In the smaller cars they are fixed. Prices of these cars range from \$2,600 down to \$2,000, there being no less than six cars in the line. The smaller car has a 35-40 horsepower engine; the other a 50-60. Dual Ignition is provided on both, with Stromberg carbureter. There is an option of Schebler in the larger machine. Both cars have three speeds forward and one reverse. The cars are made with attractive bodies, Model 34 of the Big Six, a racy looking runabout with a cosy top, being particularly striking.

McFarlan cars were entered in the races at Indianapolis on September 5, the first appearance of the Indiana machines in competition. They did very well indeed. A stock car made 200 miles in 183 minutes 16 seconds, and averaging seventeen miles to a gallon of gasoline.

Delaware Delays Action.

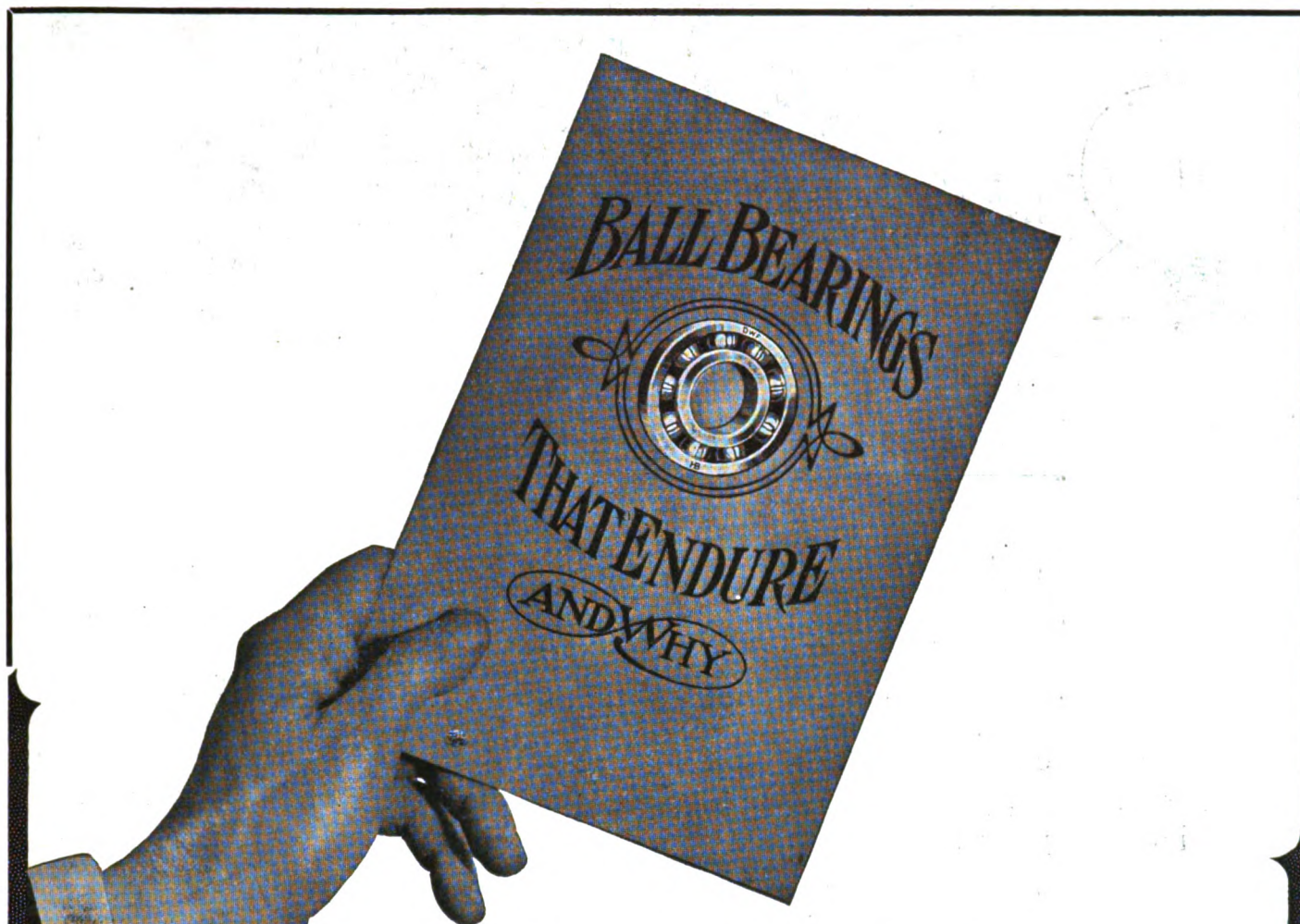
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THE McFARLAN MOTOR CAR CO., Desk D, Connersville, Ind.



Send for a Copy Today

IN your car or boat there is not a wheel or shaft but turns by means of bearings. If the bearings fail in their duty, neither wheel nor shaft can turn. This booklet tells in an interesting way about the long and costly research through which were developed ball bearings capable of enduring heavy loads. It describes the more than watch-like precision in materials and form which has been found worth while in the best ball bearings. It shows such careful precision is repaid in wearing qualities, superior to those ordinarily deemed possible.

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 New York, N. Y., The Hess-Bright Company, 1974 Broadway
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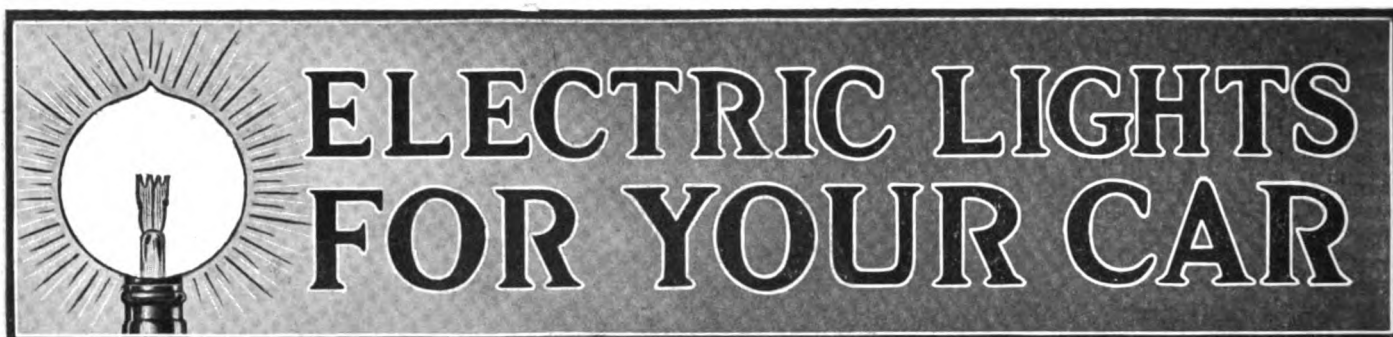
The more frequently used bearing sizes are also carried in stock by
 THE POST & LESTER CO.
 Boston, Mass., and Hartford, Conn.
 CHANSLOR & LYON MOTOR SUPPLY CO.
 San Francisco, Los Angeles and Fresno, California; Seattle and Spokane, Washington



THE HESS-BRIGHT

MANUFACTURING CO.

2109 Fairmount Avenue
 PHILADELPHIA, PA.



**The Great Step Forward in the
Perfection of the Automobile**

GRAY & DAVIS Dynamo System

A perfect electric plant in miniature. Nothing complicated, nothing to get out of order, just as convenient, just as simple and easy to operate as electricity in your home.

Here are Facts Worth Considering:

The Gray & Davis Dynamo supplies the current for your full lamp equipment, your inspection lamp and your power-operated horn.

It charges your batteries—an economy which amounts to something during the year.

You need no gas tank—another economy and absence from worry regarding the amount of gas therein.

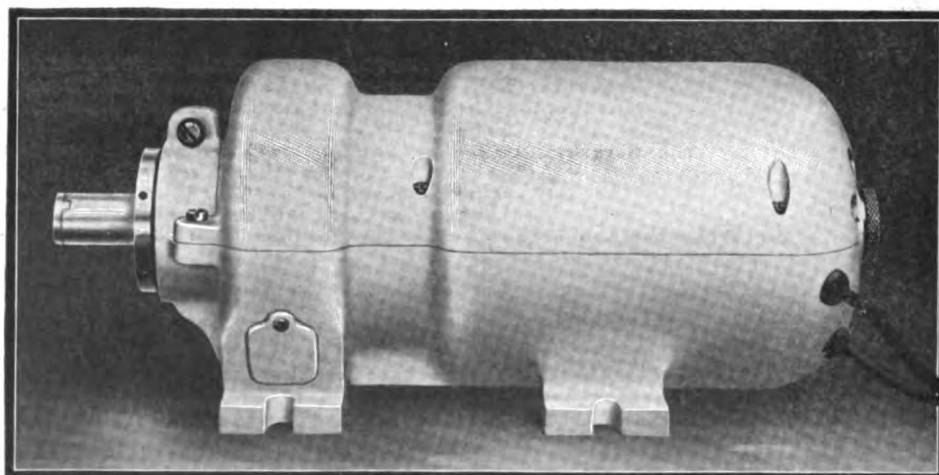
Saves time and trouble—you don't have to climb in and out to light your lamps—just turn a switch—that's all.

The modern, up-to-date method of automobile illumination.

Constant Speed Dynamo driven from engine. Compound Wound when lighting lamps. Shunt Wound when charging batteries.

GRAY & DAVIS, Manufacturers of Automobile Lamps Amesbury, Mass.

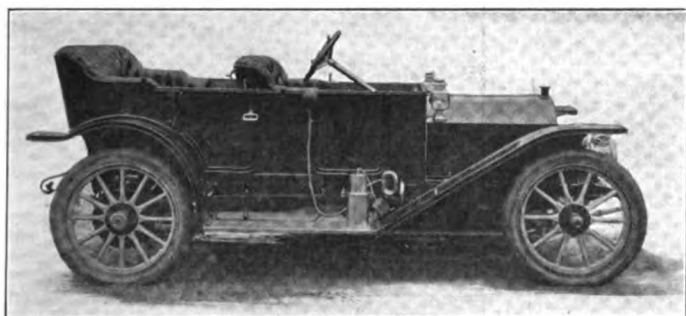
Write us to-day for very interesting booklet. Fully describes the Dynamo System and the famous Gray & Davis line of lamps.



You Can Pay More

for an automobile, but if you spend twice the amount of money you can obtain no more intrinsic value in materials, quality of workmanship or design; nor a car that will run as well and give more lasting satisfaction than a

Pullman



Model O Vestibuled Touring Car.

"Pullman automobiles are worthy of their name"

The PULLMAN car has solid strength of construction that means freedom from repairs. It has the power, the speed, the size to take you anywhere and at a low consumption of gasoline and oil.

The PULLMAN is an exceptionally powerful and reliable car that is built to fulfill every requirement of touring. Every part bears a perfect relation to every other part, which makes the PULLMAN a perfectly proportioned car—a car in which the correct suspension of every part greatly reduces the wear on tires.

In 1910 the PULLMAN won every endurance and speed contest in which it was entered, several times defeating cars of three times the PULLMAN cost and horsepower.

"Pullman Performances Prove Its Perfection"

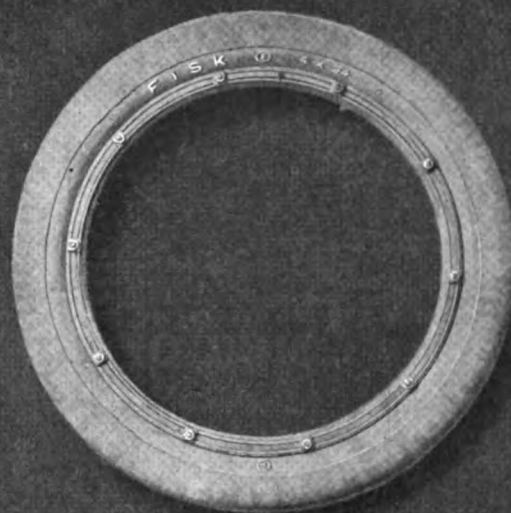
Prices \$1650 to \$4000; 30, 35 and 50 Horsepower

Write for catalog and testimonials of owners.

PULLMAN MOTOR CAR CO.

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YORK, PA.



Service and Satisfaction

are assured if your
Tire Equipment is

FISK

The name that stands for Quality,
Mileage and a Fair Deal for
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Investigate and Compare Before You Buy

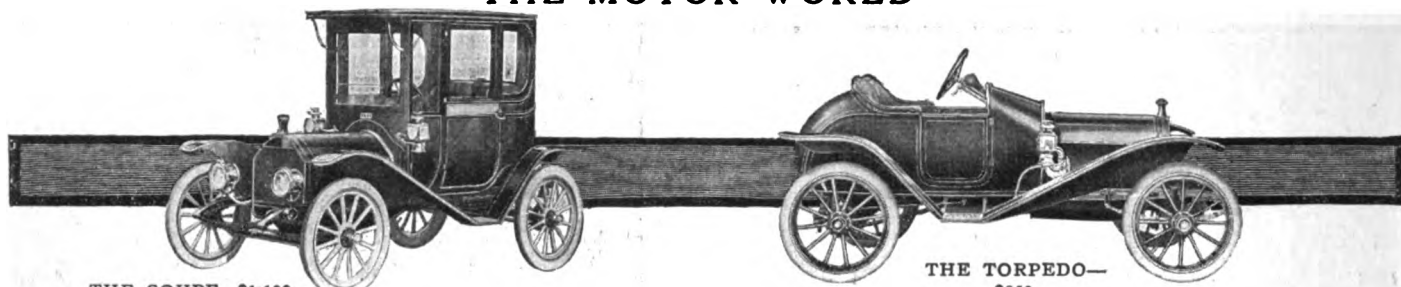
Tires for Every Rim—Bolted-On, Clincher,
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Dept. 23 Chicopee Falls, Mass.

Direct Factory Service in 23 Cities





THE COUPE—\$1,100

F. O. B. Detroit, including full equipment of electric headlights, electric and oil side and rear lamps; wiring and batteries; front shock absorbers; folding dash seat for third passenger; 31 x 3½ inch rear tires, horn and tools.

THE TORPEDO—

\$850

F. O. B. Detroit, including three oil lamps, tools and horn. Special top and windshield, gas lamps and tank or generator, etc., extra.

MEN OF MILLIONS WHO DRIVE THE

Hupmobile

GUARANTEED FOR LIFE

Nearly every man whose name is reproduced herewith owns one or more of the four or five fine cars of largest size. None of them, to our knowledge, owns any smaller car save the Hupmobile. No mere appeal of price—no consideration of a low first cost—would possibly have interested the men whose names appear in this impressive list of Hupmobile owners. Starting with New York, where men who own Hupmobiles represent wealth aggregating tens of millions of dollars, every large city in the country records its group of leading citizens who have singled out this one popular priced car for their favor. It is obvious, is it not, that they have chosen the Hupmobile because it possesses certain qualities, apart from price, which renders it attractive and desirable to them?

We have told you, many times, what these qualities were. We have impressed upon you the fact that the Hupmobile is built with such scrupulousness of method and material that it concedes nothing, save size, to the costliest cars of seven-passenger capacity.

In this list of names you have indubitable evidence that men of affairs everywhere who own and drive the costliest cars agree with us as to the worth and entire desirability of the Hupmobile.

Can you think of even one other car which appeals, at once, to the man of moderate means, and to the man of unlimited means? In the one case it is smart and efficient enough to travel side by side in perfect equality with its \$6,000 running mate. In the other it amply satisfies the buyer who limits himself to one—thoroughly reliable—machine.

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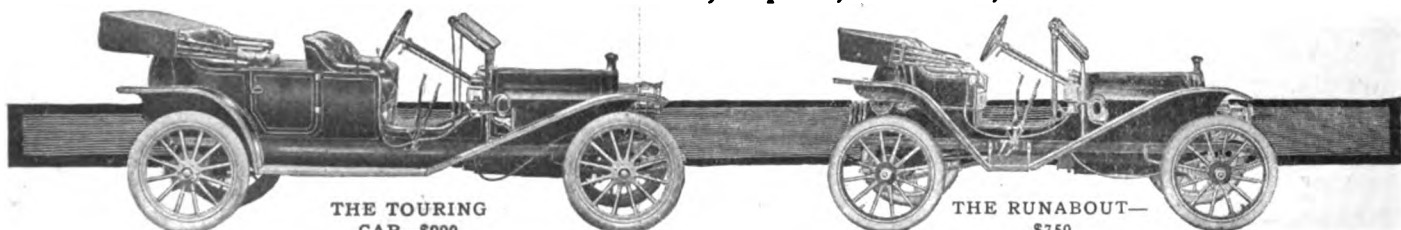
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HUPP MOTOR CAR COMPANY, Dept. K, DETROIT, MICHIGAN

THE TOURING
CAR—\$900

F. O. B. Detroit, including equipment of gas headlights and generator; oil lamps for dash and rear; front shock absorbers; 31 x 3½ inch rear tires, horn and tools. Top, windshield, speedometer, etc., extra. Wheel base, 110 inches; passenger capacity, four.

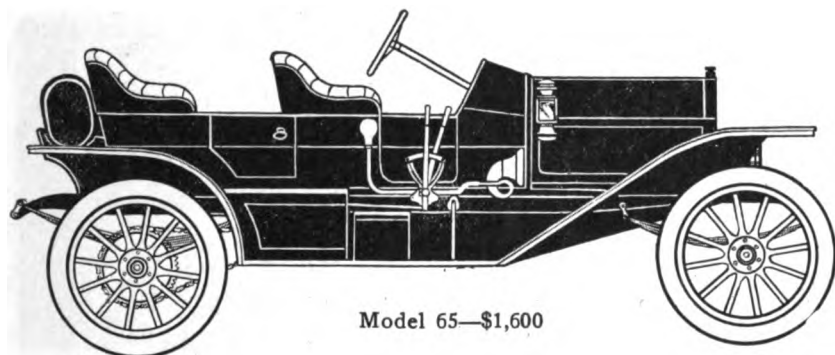
THE RUNABOUT—
\$750

F. O. B. Detroit, including three oil lamps, tools and horn. Top, windshield, speedometer, gas lamps and tank or generator, trunk rack and tire irons extra. Twenty horsepower, four cylinder engine in all models.

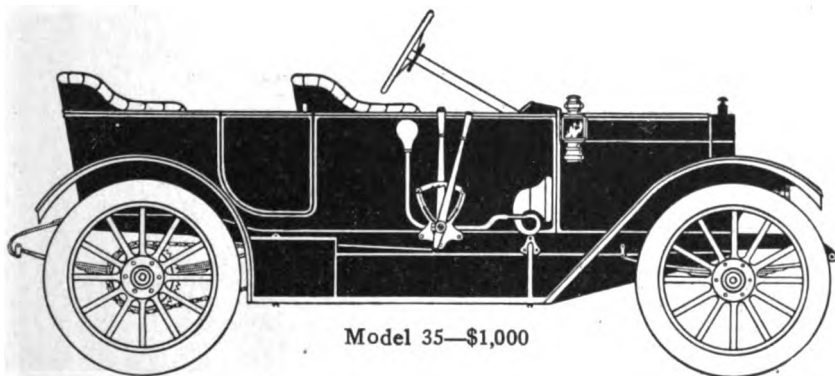
1911 Petrel

The cars that surpass
all others for superi-
ority of design and
construction, and for
serviceability.

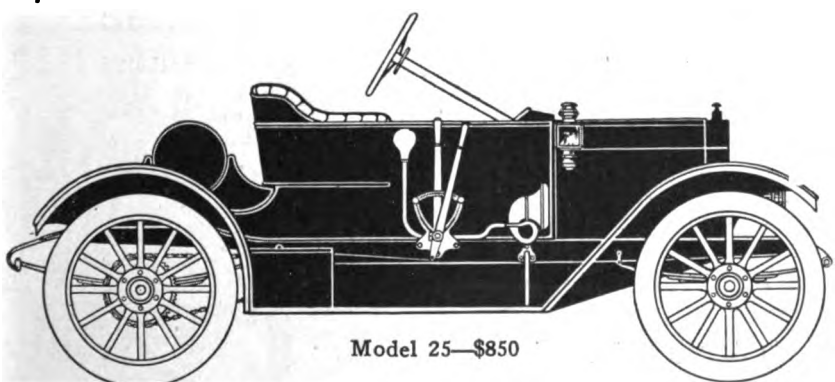
The supreme care that has been given the detail-construction of these cars, together with the adoption of only standard principles of construction, has produced motor cars that simply ought not to be classified by the price we ask. PETREL CARS are sold at prices very close to what it actually costs to produce them, and that accounts for the remarkable value we offer in every one of the seven models from \$850 to \$1,600.



Model 65—\$1,600



Model 35—\$1,000



Model 25—\$850

Courteous representatives of the PETREL MOTOR CAR COMPANY are to be found everywhere and they will all take pleasure in showing you why PETREL CARS are undoubtedly the best automobile value now on the market. Tell us where you are and we will be pleased to tell you all about PETREL CARS, or call on one of our representatives and have him explain the many advantages these cars possess.

W E E X H I B I T

At Minneapolis, Space 38,
Armory, February 18th to 25th

At Kansas City, Space K,
Convention Hall,
February 27th to March 4th

Petrel Motor Car Co.
4th Avenue and Virginia Street
MILWAUKEE, WISCONSIN

Grip the Road with WEED Chains

Chained To The Road

is what it amounts to when you use Weed Chains, *The Pioneer* of all anti-skid devices. They have made the automobile an all-the-year necessity instead of an occasional pleasure car. When your car is equipped with Weed Anti-Skid Chains you can go anywhere at any time and *get there!* All kinds of roads look alike to the car that carries Weed Chains—deep ruts, slippery pavements, heavy sand—all are conquered by this wonderful, simple, effective, time-tried device.

Weed Anti-Skid Chains

(With the "Creeping Grip")

are a necessity if you want to save your tires and insure your passengers, yourself, and your automobile against accidents.

No car should leave the garage without them. They are an absolute safeguard against skidding or slipping. As necessary as gasoline when it comes to the question of *starting* and *finishing* a trip. Weed Chains can be applied to the car in a moment without the use of jacks and they occupy scarcely any room when not in use.

Car Insurance

Ninety per cent. of all accidents are caused by the 'other fellow' who skids into you or who can't stop his car. Weed Anti-Skid Chains increase your brake power.

A chain on each rear wheel is Car and Passenger Insurance and if you want to know what real steering steadiness means, put them on your front wheels too.

All experienced motorists realize the supremacy of the Weed Chains. They can be depended upon at all times and under all conditions, whether on ice, slippery pavements, muddy roads or shifting sands.

Tire Preservation

Weed Anti-Skid Chains cannot injure your tires. Because of the wonderful "creeping grip" and the great care used in manufacturing and inspection they stand supreme; made of the hardest steel, electrically welded and tempered. Every hook stamped with the name "Weed" which guarantees the "creeping grip" and every cross chain is Brass Plated.

Conclusive experiments have proved that Weed Chains are the only perfect anti-skid device ever put on the market. Tire manufacturers realize this and many of them refuse to guarantee their tires unless Weed Chains are used.

The Only Anti-Skid Device That is Reversible

A Weed Anti-Skid Chain is reversible and has three times the life of any other anti-skid device—really two grip chains in one because it is reversible. There is no inner surface. Both sides of every link are smooth and so formed as to give the maximum grip on the road without even rubbing the tire.

Sold by all reputable dealers who also carry extra parts which can be applied in an instant and are absolutely interchangeable. If your dealer happens to be out of them for the moment, send us his name and we will see that you are supplied immediately.

See the Name "WEED" on Every Hook →

Weed Chain Tire Grip Company

28 Moore Street : : : : : New York City



An Open Letter to Car Manufacturers:

Gentlemen:

Number 3 Continental Quick Detachable Demountable Rims will after May 1st be sold to you direct by the Licensees of the United Rim Co. We will after that date sell no more rims to you.

We are not rim manufacturers and never intended to be. Our efforts have been to properly direct the demountable rim through the experimental or development stage. This we have done.

Consequently we give up our rim business after our aim has been accomplished—with the exception of sales we will continue to make to dealers and car owners.

Recognition has been emphatically given the Standard Universal Number 3 Rim.

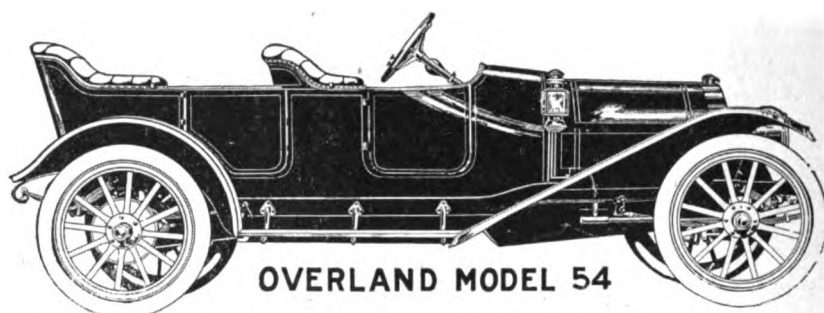
It is today the most popular Demountable Rim in America—its sale being larger than the combined sales of all other types. Many of America's foremost car manufacturers have furnished them as standard equipment on their 1911 cars and their adoption has met with instant approval.

1912 cars will show many more manufacturers added to the present number.

We express our sincere appreciation of the support given us and believe that our action in arranging to have Continental rims supplied you direct in the future will meet with your approval. Respectfully,

CONTINENTAL CAOUTCHOUC CO.

New York City, February 21st, 1911.

Overland

OVERLAND MODEL 54

The Fore Door is THE Car of the Year

Of course you want a fore door car. It's the fashionable car of the year. It's the car of the hour. In London, Paris and Berlin the fore door is the choice of those who create and set the social styles. Watch Fifth Avenue, New York any afternoon after four and you'll see more fore door cars than any other model. But there are a few things you should know about most fore door cars before you invest your money. And a little care exercised in the purchase of your machine will save you the possibility of getting a back number.

The market is flooded with old 1910 open front models which have had a pair of fore doors attached. They make an awful botchy looking job. Be careful of this. When you buy the OVERLAND you get a brand new fore door machine that is a fore door in every sense of the word. Not a made-over. Not an old model, but strictly a 1911 machine—new, handsome, beautiful and powerful. We knew the sign of the times. We knew that 1911 was going to be a fore door year and we built accordingly. Whenever you see an OVERLAND fore door you can depend on its being an original.

There are so many other things that make the OVERLAND the best value. Look over their big flush bodies with the full six inches more room in each seat. Notice the straight lines which make the car so striking and choice. See how delicately the lines and curves are fashioned—note the whole magnificent and snappy design. The OVERLAND will appeal to anyone of taste for it is a character car.

Then run through the specifications. Compare each item with any other list you might have at hand. Examine the powerful and steady motor—a wonder for work and wear. Note the big wheel base—the size of the wheels—the capacity and the general high tone and fine appointments of the OVERLAND. A little comparison will save you money and give you the most economical and efficient machine ever made.

Don't buy a motor car until you see the OVERLAND. Catalog I mailed gladly upon request.

THE WILLYS-OVERLAND COMPANY, Toledo, Ohio



LICENSED DEALERS TO DISSOLVE

Kansas City Organization First to Take the Step—Extends the Olive Branch to the Older Association.

The first of the several licensed dealers' organizations to take the cue from their source of inspiration, the Association of Licensed Automobile Manufacturers, and, like the latter, the first to decide to dissolve, is the Licensed Automobile Dealers' Association of Kansas City. The Selden patent having ceased to be a factor in the business and the line of demarcation which it created having been eliminated, the Kansas City organization has not merely voted to dissolve but in doing so extended their fraternal hand to the Kansas City Automobile Dealers' Association and thus furthered that "unification of the trade," which those higher up have stated would follow the upset of the Selden invention.

The resolution to this end adopted by the Kansas City organization is as follows:

"Be it resolved that we, the Licensed Automobile Dealers' Association of Kansas City, after being fully advised and as thoroughly convinced that the fight over the Selden patent is a thing not to be considered, feel that it, in a measure, neutralizes our usefulness as a separate organization.

"With the understanding that the parent organization, the A. L. A. M., is now, or is about to be disbanded, to be reorganized on broader and more liberal plans, putting all automobiles on a more even basis, in fact, promoting an organization that has harmony for its keynote, the Licensed Automobile Dealers' Association of Kansas City, with the knowledge that a feeling of hostility has arisen between the Kansas City Automobile Dealers' Association and our own association, have determined to wipe out the past, to dissolve our own organization, to reunite, and in every way co-operate with the Kansas City Auto-

motive Dealers' Association in the future, for the common good, and hereby promise our entire support to aid the above association in promoting their fifth annual automobile show to be held in Convention hall the week of February 27."

While this action on the part of the licensed dealers will serve to somewhat relieve the situation in Kansas City, there still will remain two rival organizations, the Kansas City Automobile Dealers' Association and the Kansas City Motor Car Trade Association, differences arising from the local show having caused a rupture which brought the latter into being some two years ago.

Kinsey Takes Over Ideal of Detroit.

The Kinsey Motor Car Co., of Detroit, capitalized at \$150,000, which was organized in Detroit last week, will take over the Ideal Motor Car Co., whose plant in Detroit was located at 58½ Clifford street. The transaction largely represents merely a change of name, as most of the stockholders in the Ideal company are stockholders in the Kinsey company, which purposes producing a touring car and a 1,000 pound delivery wagon.

Alma's Engine Builders to Produce Trucks.

The Alma Mfg. Co., of Alma, Mich., which for some time has been making gasoline engines, has gravitated into the production of motor wagons, several of which already have been produced. In preparation for its enlarged field of activity, Frank W. Ruggles, an Eastern man who has had experience in automobile construction, has been engaged to manage the Alma factory.

Colorado Truck Wants to Come East.

The Universal Motor Car Co., of Denver, Colo., is seeking a factory site further east. P. A. Balcon, the vice-president of the company, is now touring the country with that end in view. Last week he was in Cincinnati, O., where he gave a demonstration of the truck which the company has designed and which it desires to manufacture on a large scale.

DE TAMBLE IN AND OUT OF TROUBLE

Receiver Appointed and Discharged Within 36 Hours—Company Reorganized and New Officials in Control.

Due to rapid fire action on the part of certain of its creditors, assisted by the county court, the De Tamble Motors Co., of Anderson, Ind., has established something of a record in the receivership line. Late on Thursday last, 16th inst., it was forced into the hands of a receiver and about 36 hours later the receiver, the Anderson Trust Co., was discharged and a new company of the same name assumed control of the De Tamble property and affairs.

Although the company was full up with orders, it has been known for some time that it was pinched by lack of ready cash and that friendly creditors were doing their utmost to prevent the failure which threatened, while the De Tamble principals themselves were negotiating for new capital to the extent of \$150,000. On Thursday last, however, the Wm. Cramp & Sons Ship & Engine Building Co., of Philadelphia, Pa. whose claim amounted to \$450, precipitated matters by applying for the appointment of a receiver and Judge Austill, in the Madison County Superior Court, promptly designated the Anderson Trust Co. as receiver.

Shortly before this was done and in the effort to avert a failure, the friendly creditors of the company, already had formulated plans for a reorganization of the company, and even had selected officers of the new corporation which was to take charge. The committee also had forced the withdrawal of Edwin S. De Tamble, the responsible man in the De Tamble Motors Co., who, for the benefit of the creditors, had assigned \$150,000 worth of the company's common stock to E. W. Arbogast, the general manager of the company. Previously, for a nominal consideration, he

also had assigned to his wife \$50,000 worth of common stock and what was known as the De Tamble bungalow in Indianapolis, one of the largest and most luxurious residences of that type in the city.

After the receiver had been appointed, the 'creditors' committee performed some quick and effective work. The Cramp company was induced to withdraw its application for a receiver and Judge Austill held a night session of his court on Friday at which the withdrawal was countenanced and the receiver discharged. The new company then took over the De Tamble property and installed the officers who, in preparation for such a move, had been selected for the purpose, viz.: President, John J. Appel, of Indianapolis; vice-president and manager, E. W. Arbogast; secretary and treasurer, Clarence Forth, of Indianapolis.

Mrs. De Tamble also found it advisable to reconvey to the new company the \$50,000 worth of stock and the Indianapolis property which had been assigned to her. In return therefor, she received stock in the new company.

The reorganization plan, which is subject to the approval of the creditors, calls for the issuance of \$150,000 in first mortgage bonds bearing 6 per cent. interest, payable semi-annually, and maturing in sums of \$20,000, \$30,000, \$30,000, \$35,000, \$35,000, on February 1st of each of the next five years. The mortgage will provide that all bonds be equal liens without priority to anyone.

The liabilities of the De Tamble Motors Co. are \$186,000, which includes \$40,000 in deposits advanced by agents. The agents concerned have proposed to purchase common stock to the extent of \$100,000 and to put into the treasury \$50,000 as new working capital.

The reorganization plan already has been approved by creditors representing \$120,000 and by the agents who have made deposits.

New Thomas Company Chooses Officers.

The organization of the new E. R. Thomas Motor Car Co. which, financed by the New York banking house, Eugene Meyer, Jr., & Co., has taken over the business of the E. R. Thomas Motor Co., of Buffalo, has been completed by the election of officers, all of whom are former Packard men. E. P. Chalfant, as stated last week, has assumed the presidency, the other officials selected being F. R. Humpage, vice-president and general manager; J. J. Ramsey, treasurer. W. L. Gleason, the former factory manager of the Packard company, will occupy a similar position in the new Thomas establishment.

It develops that Eugene Meyer, who financed the new undertaking, is the banker to whom Benjamin Briscoe, president of the United States Motors Co., introduced the creditors' committee, when the latter

first sought to disentangle the Thomas Motor Co.'s affairs. At that time Mr. Briscoe himself and two of his colleagues were charged with having designs on the Thomas property, but he denied that his interest arose from more than a fraternal desire to help relieve a "suffering brother." He, however, kept in close touch with the negotiations which were brought to such a successful consummation.

Changes Among Prominent Tradesmen.

A. F. Osterlich, manager of the Good-year Tire & Rubber Co.'s Chicago branch, has been promoted to the post of western sales manager and will have charge of all the territory west of Chicago. W. W. Calahan, who has been connected with it for four years, succeeds to the management of the Chicago branch.

George D. Wilcox, sales manager of the Regal Motor Car Co., of Detroit, has been advanced to the office of assistant general manager, a title he will share with J. C. Austin, whose duties, however, pertain largely to the mechanical department of the company. The sales management has been assumed by F. L. Pierce, previously manager of the Cleveland, O., branch.

Charles E. Stahl, formerly western representative of A. R. Mosler & Co., has engaged in a similar capacity with the Connecticut Telephone & Electric Co., and will have charge of the branch which the latter company is about to establish in Chicago. E. D. Bright, who previously covered a portion of the West for the Connecticut company, henceforth will confine himself to Eastern territory and his Western ground will be covered by W. H. Lolley, who previously was with the Remy Electric Co.

Receiver Takes the O-U Handy Tool.

The O-U Handy Tool Co., of North Vernon, Ind., which was organized last fall by L. A. Brown, of Indianapolis, who purposed manufacturing automobile jacks and a combination tool, has gone into the hands of a receiver. The step was taken at the instance of the directors who asked the court to wind up the company, in the stock of which the good people of North Vernon have been aroused to the extent of subscribing \$7,000. The company secured a factory site and the necessary machinery but ran short of money before it could produce anything.

Veerac Finishes Truck Factory at Anoka.

The Veerac Motor Co., which was organized in Minneapolis last year, has completed a factory at Anoka, Minn., and begun active operations. The purchasing and sales departments, however, will be maintained in Minneapolis at 422 Fourth street, South. Trucks will constitute the concern's output, the nature of its power plant being indicated by its name, which is

an acrostic formed of the letters in the words, Valveless, Explosion Every Revolution, Air Cooled.

Berkshire Mortgage Passes to New Hands.

Stuart H. Clapp, vice-president and clerk of the Berkshire Auto Car Co., of Pittsfield, Mass., which was reorganized about a year ago, in whose favor the property of the company was mortgaged for \$16,427 in July last, has assigned the mortgage to Robert P. Parker, a real estate and insurance man in Pittsfield. No statement concerning the significance of the transfer accompanied it.

Bow Maker Buys the Crozier Factory.

G. W. Millikan, manufacturer of automobile bows in Montpelier, Ind., is removing his factory to Muncie, in the same state. He has purchased the building formerly occupied by the Crozier Automobile Works and expects to commence operations in the new location within a couple of weeks.

Detroit Promoter in Canadian Jail.

Thomas G. Morehead, described as a Detroit promoter, is in jail in Chatham, Ont., unable to obtain \$2,000. He is charged with obtaining money in sums from \$15 to \$200, under false pretenses by representing that he had paid certain bills growing out of suits brought against the Walker Motor Car Co. of Chatham.

Gramm Enlargement Again Necessary.

Although the Gramm Motor Car Co. only last month removed from Bowling Green, Ohio, and took possession of its new and larger plant at Lima, Ohio, the necessity for more room already has become apparent. As a result, plans for an addition now are being drawn.

Packers Truck Planning to Leave Pittsburg.

The Packers Truck Co., of Pittsburg, probably will remove to Wheeling, W. Va., although factory sites in several other places have been tendered. Wheeling capital already is invested in the company, however, and is expected to wield a deciding influence in the matter.

Iron Company to Make Gasolene Engines.

The Holbrook-Armstrong Iron Co., of Racine, Wis., has increased its capital stock from \$150,000 to \$300,000 and will, it is said, engage in the manufacture of gasolene engines; at any rate it is known that the company has been perfecting a four-cylinder automobile motor.

Briggs to Build Big Body Plant.

The Briggs Mfg. Co. has let contracts for the erection of a three-story brick addition to its body and accessory plant in the Hamtramck section of Detroit, Mich., which practically will double its capacity. The addition will be L shaped, one wing being 100 x 220, the other 85 x 250 feet.

WHY NEW ORGANIZATION IS NEEDED

Reasons that Still Exist for Common Defense and Community of Interest—Position of the Larger Makers.

"Whatever people may say of the Selden patent, and regardless of the merits of the patent itself, the data which it rendered available was of almost priceless value to the industry, and the benefits of co-operation of business rivals was never better demonstrated than by some of the accomplishments of the Association of Licensed Automobile Manufacturers," a few days since declared a man than whom none stands higher in the trade. The remark was born of discussion of the proposed new corporation which is designed to succeed the Association of Licensed Automobile Manufacturers. "The need for an organization of the sort has been well indicated by straws which have been stirred by the wind since the Selden patent was declared invalid.

"The immediate result of the upset of the Selden patent has been to bring to the surface of a number of other alleged basic patents whose owners or exploiters imagine they see millions in them. They are offering them for sale or attempting to form combinations around them and this sort of thing requires that form of insurance which is born of a well-knit organization.

"To the manufacturer who produces two or three or four hundred cars per year, a royalty of one or two or three dollars per car represents but a comparatively small item and because of the fact some of the smaller manufacturers are prone to take the easiest way out and to accede to such demands rather than to engage in expensive litigation. To the manufacturer who has an output of thousands instead of hundreds of cars, however, the royalty demanded by two or three such sources represents a pretty sum, and unless there is a united front presented each manufacturer must necessarily fight his own battles against each individual exploiter.

"It is not wholly a secret that there are several members of the Association of Licensed Automobile Manufacturers who own patents that they believe to be quite generally infringed, and that they have been itching to take action even within the association itself. This spirit was manifested on various occasions during recent years, and it was only that arbitration which comes of a community of interest that prevented the institution of legal proceedings against the infringers.

"One of the underlying ideas of the proposed new corporation is that when the individual manufacturer is threatened by such litigation there shall be an organization

ready and willing and competent to take care of it for him, and at the cost of the corporation itself. In other words, the new organization, like the old one, will serve as a common defender on the 'one-for-all,' 'all-for-one' principle.

"The provision in the prospectus of the proposed corporation that its stockholders shall render quarterly reports of their production and pay into the treasury 1/10 of 1 per cent. of its value is wiser and more beneficial than may appear on the surface. It permits an absolute check to be kept on the industry and the information is equally valuable to all. The value that such records held for the members of the A. L. A. M. is not easily estimated.

"Let us assume, for instance, that a man has in mind the production of, say six-cylinder cars or two-cycle cars, or trucks of whatever sort. Where else can he obtain authentic information than from such records? They have kept many a man on safe ground, and whenever they are available they always will do so.

"The idea that because so many of the larger manufacturers are prominent in the A. L. A. M., and are interested in the formation of the corporation which will succeed it, are seeking to dominate the trade is another notion that deserves to be thoroughly exploded. They are seeking to do nothing of the sort. In fact, there are 15 or 20 of us that could form an organization of our own and perhaps better serve our purposes, but we have the whole good of the industry at heart and are, therefore, ready and willing to co-operate with the smaller makers. In becoming members of such organizations we have no more voting power than those who produce one-tenth as many cars, and as the small manufacturers always outnumber the larger ones it means that the latter almost place themselves at the mercy of the former. We can be outvoted on almost any question. This is one standpoint from which the situation rarely is viewed, but that it represents a fact is self-evident.

"There is no idea that the new corporation shall be a close corporation," concluded the manufacturer who delivered himself of these opinions. "The idea exists that the door shall be wide open and that any manufacturer of repute and responsibility, whether large or small, shall be permitted to enter and share the profits."

More Foundry Products from Michigan.

The Detroit Foundry & Mfg. Co. has been formed in the Michigan city of that name and will produce automobile castings and parts, among other things. It has leased and equipped a plant at 13-15 McComb street, and is ready for business. The officers of the company, which is capitalized at \$50,000, are: President, John T. Rich; vice-president, Dr. D. A. MacLaghlan; secretary and attorney, Jonathan Palmer, Jr.; treasurer, George E. Lawson.

PATENT ON RAJAH PLUG SUSTAINED

Makers Obtain Judgment Against Grossman Company—Court Holds that it "Progressed the Art."

Although admitting that the separate elements in issue were not new even in spark plugs, Judge Hazel, sitting in the United States Circuit Court for the Southern District of New York, has found the successful combination of the elements as contained in the spark plug covered by the E. J. Mills patent No. 825,856, of July 10, 1906, and made by the Rajah Auto Supply Co., of Bloomfield, N. J., effected "a new and useful result" and one that "progressed the art." Accordingly he upheld the patent and has ordered a decree entered against the Emil Grossman Co., of New York, the suit for infringement in which the judgment was rendered having been brought by the Rajah company, of which the patentee, Mills, is president, against the Grossman company.

The essential features of the court's decision are as follows:

The proofs show that in prior spark plugs there was difficulty in keeping the porcelain shank from cracking when the bushing was screwed down or clamped tight against the gasket on the shoulder to prevent the escape of gas. Indeed, that the use of asbestos gaskets was objectionable in that they would not hold tightly against the explosive forces without first tightening the parts, appears clearly from the patent to Mosler, No. 738,831, dated September 15, 1903, which evidently was designed to remedy said defect but without success. In the Mills patent in suit a ring gasket is placed in the shoulder between the lower edge of the bushing and the enlarged portion of the tapered shank to obtain a yielding pressure, while Mosler inserted the packing gasket between the porcelain shank and the socket. The bushing used by the patentee is preferably made of soft brass and may be screwed down tightly upon the porcelain shank to make an absolute joint, and owing to its sharpened or beveled edge yields to any slight irregularities of form in such porcelain shank. The claims are for a combination and the third and sixth only are in controversy. . . .

The elements of claim 3 are: (a) A socket with a screw-thread and shoulder; (b) a shank which is provided with an enlargement adapted to rest on the shoulder and departing outward from said shoulder; (c) a threaded bushing surrounding the tapered portion and screwed in a socket and adapted to press upon the tapered portion, the lower edge of said bushing being sharpened and formed of soft metal so that it will be upset when screwed down upon the tapered portion. Claim 6 is not unlike claim 3, except that it emphasizes that the bushing below the thread shall be of smaller diameter than the threads and formed of soft metal. The principal defenses are want of patentability and non-infringement.

The defendant contends that the claims do not clearly express the nature of the improvement in that they are open to the

impression that the lower edge of the bushing is of different metal than the body of the bushing. The specification and proofs, however, sufficiently disclose the intention of the patentee to provide a bushing of soft material preferably soft brass, which at its lower edge shall be sharpened for upsetting when screwed down tight on a porcelain shank. It was of the utmost importance to secure a uniformly distributed pressure on the porcelain shank, which was easily ruined or cracked from pressure, and that such object was achieved is thought clearly established. It is a general rule of patent law that when the claims are ambiguous or uncertain a construction should be placed upon them which sustains the contract with the government rather than one which destroys it (*National Hollow Brake-Beam Co. v. Interchangeable Brake-Beam Co.*, 106 Fed. Rep., 693). I think the Mills invention may be fairly regarded as an improvement which progressed the art. None of the prior patents for spark plugs—the Mosler patents, Nos. 698,042 and 738,831, patents to Jacobson, No. 774,432, to Herz, No. 790,571, to Ross, No. 829,545, disclose the combination of claims 3 or 6. The Mosler and Jacobson bushings were of the unyielding type and could not be upset or expanded to make a tight fit on the tapered shank. In the Ross patent (which, however, according to the evidence was applied for subsequent to the completion of the Mills invention, in March, 1904) the lower edge of the bushing is threaded and the edge cannot be upset or expanded. Manifestly none of the patents specified solved the problem of overcoming the defects which the simple though important modification made by the patentee solved.

In my opinion it required more than mere mechanical skill to make such improvement. While it is true the separate elements of the claim are not new—they are found in prior inventions for spark plugs and in another art—yet when assembled as they are by the patentee and made of soft metal, a new and useful result was attained. It is invention without doubt to combine old elements by which a new and useful result is produced and, moreover, a combination of elements may be patentable if any old result is secured "in a more facile, economical and efficient way." (*National Hollow Brake-Beam Co. v. Interchangeable Brake-Beam Co.* supra.)

It was not mere substitution of an old bushing in a new environment. Its use in connection with a porcelain shank was not so analogous to the bushing known to the art as to become in its new use an obvious expedient or a case of double use.

Does the defendant corporation infringe the claims? The evidence discloses that the defendant in its construction of a spark plug embodies the subject matter of claim 3 in suit and the various parts are assembled in the same way and the precise result of the patent in suit is attained. Its porcelain shank is substantially formed and tapered as in complainant's device and its bushing of soft metal is threaded and adapted to be screwed upon the socket and upset against the tapered portion of the porcelain shank. The defendant sharpens the bushing at its lower end and thus reduces its diameter below the threads and hence also infringes claim 6.

My conclusion is that the claims are valid and patentable as an improvement in spark plugs, and complainant is entitled to its exclusive use and hence may have a decree for an injunction as prayed for in the bill, with costs.

IN THE RETAIL WORLD.

Earl Rider will take possession of his new garage at Oakfield, Wis., on March 1. He sells Rider-Lewis cars.

William Powers and Dave Welsh have formed a partnership and started building a garage at Maple Park, Ill.

William Pendray has purchased the controlling interest in the Mt. Pleasant (Ia.) Auto Co., which was held by A. J. Clark. There will be no change in name of the company.

The Pregler Garage at 323 West Jackson street, Madison, Wis., is being enlarged to four stories. The two additional stories will be used as repair shops and for tire vulcanizing.

Huerth & Knipshield, who conducted a garage in Prairie du Sac, Wis., have dissolved partnership. The former bought out his partner and will continue the business alone.

L. A. Martin and Harry Bruce have formed a partnership and opened a garage in the Bullock block, Elmira, N. Y. They will do business under the style the Martin Garage Co.

The Ford Auto Co. has been organized in Platteville, Wis., with F. L. Snowden as president and H. E. Eastman secretary and treasurer. As the name implies, Ford cars will be handled.

J. B. McCrillis & Son, carriage and automobile body builders of Manchester, N. H., have taken on the sale of complete cars. They have secured the Velie agency for the entire state.

Howard Brice has commenced work on a garage, 92 x 90 feet, at Ocean City, N. J. It is located at the corner of Tenth street and Asbury avenue, and will cost when completed \$4,000.

The O. L. Schaefer Co., of Milwaukee, Wis., is preparing to erect a garage and repair shop on 23d street, of that city. The building is to be 95 x 95 feet and of fire-proof construction.

George L. Dwinnell is a newcomer in the automobile business in Waukesha, Wis. He has opened a salesroom where he displays automobiles and other vehicles and agricultural implements.

The Rummele Automobile Co. has been organized at Sheboygan, Wis., with headquarters at 704 Center avenue. E. H. Rummele and Albert G. Schmidt are the partners, and they will handle the Buick line of cars.

Anton May, who conducted a garage at 67-69 Broadway, New Haven, Conn., has filed a petition in bankruptcy in the Federal court. His liabilities are \$2,240.70, while his assets are \$980.19, consisting mainly of stock and machinery.

C. W. Clifford, who recently secured the Velie agency for the state of Maine, has organized the Velie Motor Car Co. of

Maine with himself as president and treasurer, and John P. Goff as manager. Its headquarters will be at Bath, Me.

Fenn Brothers, who are said to have been the first men to open a garage in the state of South Dakota, but who afterwards went into other business, have returned to their old love and established salesrooms in Sioux Falls. They have the state agency for Marmon cars.

The Standard Motor Car Co., of Des Moines, Ia., has opened new salesrooms at 908 Locust street, with E. A. Kizer in charge. Simultaneously the company has taken the agency for Knov and Paterson cars, in addition to the Ohio line which it handled previously.

George F. Kreitlein has been appointed receiver for Carl S. Ticks, doing business under the style the Indianapolis Automobile Co., upon the application of the National Refining Co. The liabilities of the company are \$10,000, while the assets barely reach \$1,000.

The Acme Auto & Garage Co. is the style of a new concern which has been organized at Platteville, Wis. It is composed of John Kettler, president; Charles Burg, treasurer; T. M. Savage, secretary; while Frank L. Goodell is the manager. It will begin business on March 1st.

Glenn Frazell, president of the Frazell Auto Co., of Cincinnati, O., who last October filed a petition in involuntary bankruptcy in the Federal Court, has received his final discharge. The stock of the company was sold at public auction, bringing nearly 95 per cent. of the money owing to creditors.

A petition in bankruptcy has been filed against the Western Motor Car Co., of Springfield, Mo., by the Otto Specialty Co., of Kansas City, the Purity Oil Co., and the Electrical Equipment Co., whose claims aggregate \$600. The petition alleges that all the property of the company has been transferred.

At a cost of \$125,000 a new building has just been erected for the Peerless Motor Car Co., at the corner of Cannon street and Fairfield avenue, Bridgeport, Conn. The structure is 113 x 117 feet, four stories in height, of reinforced concrete throughout, and will be ready for occupancy on March 1st. As the name indicates, Peerless cars will be dealt in exclusively.

Heralded as the finest salesroom and the most complete garage in the state, the Erwin M. Jennings Co.'s garage of Bridgeport, Conn., was opened last week with a large display of Haynes, Hudson and Stevens-Duryea cars. It is located at 277-281 Fairfield avenue, is four stories high, with 2,500 feet of floor space on each story, capable of accommodating 200 cars, and cost \$75,000. Harry E. Ashmore, formerly of the Post & Lester Co., is the manager.

THE WEEK'S INCORPORATIONS.

Franklin, Pa.—Wilson Motor Starter Co., Pennsylvania laws, with \$30,000 capital.

Williamsport, Pa.—Keeler Motor Car Co., under Pennsylvania laws, with \$50,000 capital.

Pittsburg, Pa.—Pennsylvania Sales Corporation, under Pennsylvania laws, with \$5,000 capital; to deal in automobiles.

Boonville, Ind.—Boonville Auto Co., under Indiana laws, with \$10,000 capital. Corporators—J. W. Winsett, Andy Franz.

Dallas, Tex.—Texas Auto Specialty Mfg. Co., under Texas laws, with \$25,000 capital. Corporators—L. L. Lane, H. H. Moore, I. M. Moore.

Des Moines, Ia.—Pitt-Matthews Carriage Co., under Iowa laws, with \$10,000 capital. Corporators—Mabel A. Pitt, Edwin Matthews, R. G. Griebbe.

Saginaw, Mich.—Bolton Auto Co., under Michigan laws, with \$10,000 capital; to operate a garage. Corporators—F. H. Beach, G. M. Mason, S. D. Bolton, A. S. Rogers.

Louisville, Ky.—Urwick Motor Car Co., under Kentucky laws, with \$15,300 capital; to deal in motor vehicles. Corporators—C. Urwick, Thomas D. Osborne, J. B. Baskin.

Detroit, Mich.—King Motor Co., under Michigan laws, with \$400,000 capital; to manufacture and deal in automobiles. Corporators—H. White, Jr., T. C. Fox and others.

Indianapolis, Ind.—Central Automobile Co., under Indiana laws, with \$10,000 capital; to deal in motor vehicles. Corporators—G. N. Carter, C. W. Sweet, F. S. Chapman.

Macon, Ga.—Standard Automobile Co., under Georgia laws, with \$20,000 capital; to build automobiles. Corporators—J. W. Saunders, Ben C. Smith, R. C. Houser, W. E. Cookerly.

Kansas City, Mo.—Rapid-Reliance Motor Truck Co., under Missouri laws, with \$20,000 capital; to deal in commercial vehicles. Corporators—H. C. Shimp, H. G. Shimp, F. W. Shimp.

Burlington, Wis.—Raymond C. Agner Co., under Wisconsin laws, with \$30,000 capital; to deal in motor vehicles. Corporators—Hugh Agner, Raymond C. Agner, Edward Brook.

Kansas City, Kan.—Albertson Motor Car Co., under Kansas laws, with \$10,000 capital; to deal in motor vehicles. Corporators—H. F. Hopp, Hazel H. Albertson, F. S. Albertson.

Chicago, Ill.—Davies Commercial Car Co., under Illinois laws, with \$10,000 capital; to deal in motor cars. Corporators—Will T. Davies, Fred W. Van Sicklen, Charles A. Coey.

Huntington, W. Va.—Central Motor Co., under West Virginia laws, with \$10,000

capital; to deal in gas engines and automobiles. Corporators—C. H. May, W. R. Kyger, L. A. Day, G. F. Atkin.

Wheeling, W. Va.—Auto Car Co., under West Virginia laws, with \$10,000 capital; to deal in automobiles. Corporators—E. R. Romin, John P. Arbenz, E. R. Horstmann, H. W. Gundling, H. L. Arbenz.

Hudson Falls, N. Y.—Smith-McCoy Auto Co., under New York laws, with \$12,000 capital; to deal in automobiles. Corporators—A. E. Smith, Carolyn Smith, of Hudson Falls, and F. V. McCoy, of Fort Edward.

Bridgeport, Conn.—Waldorf Motor & Machine Co., under Connecticut laws, with \$5,000 capital; to do general automobile garage business. Corporators—Charles E. Waldorf, Sarah A. Foulds and Bertha E. Steves.

Chicago, Ill.—Park Garage Co., under Illinois laws, with \$5,000 capital; to do general automobile and garage business. Corporators—B. G. Wheeler, William H. Wheeler, Edward E. La Schum, Lucetta L. Ruegge.

Hankinson, N. D.—Hankinson Automobile Co., under North Dakota laws, with \$10,000 capital. Corporators—M. A. Wiperman, E. L. Kinney, G. L. Ireland, R. H. Hankinson, F. O. Hunger, John Green, J. R. Jones.

Cleveland, Ohio—Cleveland Alloys Co., under Ohio laws, with \$30,000 capital; to manufacture alloys for the automobile and other trades. Corporators—Richard Bacon, Albert O. Clay, E. M. Hain, H. C. Boyd, Ward Sager.

Camp Washington, Ohio—Victor Lamp Co., under Ohio laws, with \$100,000 capital; to manufacture automobile lamps. Corporators—W. J. Corcoran, John L. Corcoran, Edward B. Corcoran, H. R. Kerans, John Galvin.

Memphis, Tenn.—Auto Timetest Co., under Tennessee laws, with \$3,000 capital; to manufacture automobile accessories. Corporators—J. H. Wright, Percy Galbreath, E. L. Hurlburt, Walter Hunter, W. H. Harrelson.

Cleveland, Ohio—Cleveland Auto Sales & Mfg. Co., under Ohio laws, with \$25,000 capital; to manufacture and deal in automobiles. Corporators—Charles A. Aaron, J. A. Burke, Jr., Thomas P. Corey, William M. Byrnes.

Detroit, Mich.—Mobile Windshield & Top Co., under Michigan laws, with \$10,000 capital; to manufacture tops, windshields and other automobile accessories. Corporators—Eugene Dupont, E. J. Lowden, J. L. Gedder.

Indianapolis, Ind.—Motor Car Mfg. Co., under Indiana laws, with \$75,000 capital; to manufacture and sell automobiles. Corporators—William C. Teasdale, Jr.; Fred C. Dorn, Wayne K. Bromley, Guy O. Simmons, Frank H. Teagle.

Cleveland, Ohio—Cleveland Regal Sales Co., under Ohio laws, with \$10,000 capital; to deal in automobiles. Corporators—Harry L. Lance, Celia I. McGowan, Virginia S. Sperry, Benjamin R. Stevens, George P. Sperry.

Jersey City, N. J.—Montgomery Garage Co., under New Jersey laws, with \$125,000 capital; to maintain a garage and deal in all kinds of motor vehicles. Corporators—Charles N. King, Jr., Mary A. Cox, George H. Russell.

Springfield, Ohio—Auto Inn Co., under Ohio laws, with \$15,000 capital; to deal in automobiles and maintain a renting service. Corporators—E. S. Kelly, H. E. Otewalt, Charles L. Bauer, John L. Zimmerman, W. J. Lee.

Lafayette, Ia.—Lafayette Motor Car Co., Limited, under Louisiana laws, with \$25,000 capital; to manufacture and deal in automobiles. Corporators—Charles D. Caffery, S. R. Parkerson, T. M. Blossat, Jr., L. O. Clark, J. E. Trahan.

Branford, Conn.—Aircraft & Auto Mfg. Co., under Connecticut laws, with \$24,500 capital; to manufacture parts and specialties for automobiles and aeroplanes. Corporators—Edwin E. Roberts, Frank W. Gordon, Frank S. Bradley.

Harrison, N. J.—T. J. Butler, under New Jersey laws, with \$25,000 capital; to deal in automobiles. Corporators—Thomas J. Butler and Mary C. Butler, 540 Harrison avenue, Harrison; Eugene H. Goldberg and Mary T. Goldberg, Arlington, N. J.

Charlestown, W. Va.—Penn Tire Filler Co., under West Virginia laws, with \$50,000 capital; to do general automobile business. Corporators—Cornelius D. Scully, Stanley Loomis, O. E. Bartlett, Paul Killian, R. Herzog, all of Pittsburg, Pa.

Kokomo, Ind.—McReynolds-Scott Hardware Co., under Indiana laws, with \$15,000 capital; to do general hardware and vehicle business, and deal in automobile accessories and implements. Corporators—J. R. McReynolds, C. O. Scott, C. W. Reynolds.

Recent Losses by Fire.

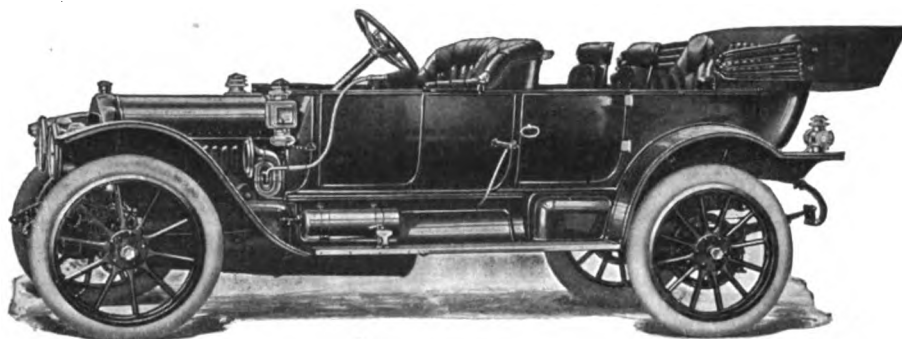
Napoleon, Neb.—Gustav Kohler's garage and two cars destroyed. Loss, \$4,000.

Chicago, Ill.—Auburn Automobile Co., Michigan avenue; entire building destroyed. Loss, \$100,000.

Minneapolis, Minn.—Mich-Heinrich Auto Co., 6-10 Tenth street South, garage and contents destroyed. Loss, \$15,000; partly covered by insurance.

Wilkes-Barre, Pa.—Wilkes-Barre Motor Transit Co.'s garage destroyed; two passenger buses, two large motor trucks and four touring cars burned. Loss, \$50,000.

Atlanta, Ga.—Asa G. Candler's garage and three automobiles burned. Loss \$20,000; caused by gasoline blow pipe used in soldering broken feed pipe.



Performance is the Only Measure of a Motor Car

There is just one thing which we all need to know about any motor car to be judges of its real value—we need to know its record of performance in the hands of owners. Not only its record for sturdiness and reliability, but for economy in fuel and oil consumption as well as maintenance expenses. From the crowd of meritorious cars, to which has been applied the various tests of price—quality—or luxurious and extravagant equipment—from this mass of reliable motors comes one car which seeks to be known by its efficiency and economy in operation. This car—the White—is gasoline driven and has all the refinements of manufacture which modern engineering sciences can supply. The cylinder casting is en bloc—the motor is the long-stroke type—the transmission is selective with four forward speeds. In fact, nothing has been neglected, nothing omitted which could make a better car. It is built to endure. Larger and more cumbersome cars have been built, more powerful and consequently wasteful cars are built—but no factory, either at home or abroad, builds better.

Why White Gasoline Cars are Economical

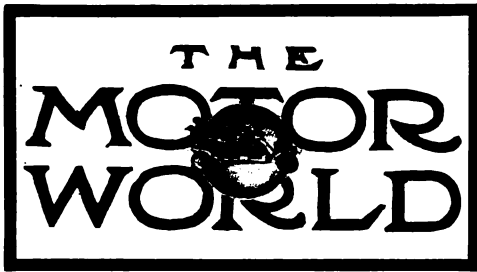
The White cars are economical because they are well built—proper steel alloys being used in the construction throughout. They are economical because they have four moderate sized cylinders—because they have the long-stroke engines which permit these moderate sized cylinders to develop more than 30 horse-power—because they have four forward speeds, allowing the driver to select a gear suited to the road condition—because being of moderate size and weight, White cars, are easy on tires, the largest single item in up-keep expense.

By every test of performance, the White car is the one that satisfies the greatest number of requirements—it does everything that may be done with any car—goes anywhere any car may go, but at a lower cost, and that is its demand upon your attention.

May we send you our new catalogue and testimonials of owners?


The White Company

850 East 79th Street, Cleveland



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No "Glidden Tours" for Trucks!

Perhaps the Chicago Motor Club is wiser than it appears to be in brushing aside opposition and deciding to promote a truck contest from New York to Chicago; it is to be hoped at any rate that this will prove to be the case. The club's disposition to "boom things" is fairly well known and is not to be sneezed at. But even in "booming things" there should be some regard for the things to be boomed and for the effects thereof.

Commercial vehicles do not readily lend themselves to such efforts. The elements of sport are wholly lacking in their make-up and surroundings. They are founded and bounded on all sides by dollars and cents and by calculations in which dollars and cents always figure. The idea of a Glidden tour for big lumbering trucks suggests opera bouffe. Even though they are able to "go the route," they are not built for that sort of thing. No merchant purchases them for such purposes.

If the New York-Chicago contest should come to pass, what must be its net result? The answer is almost self-evident. It merely will demonstrate that given time enough, a truck can negotiate the distance of 1,000 miles. This in itself may be sufficient for the promoters of the "tour," but the hardheaded merchant who may have one ton, or two, three or five tons of goods to ship between the two cities, scarcely will close his eyes to the fact that he can ship such quantities by rail for one-half, one-third or one-fourth the cost and in one-half, one-third or one-fourth the time. No jugglery can force any other result.

The enthusiastic Chicagoans are putting the motor truck, not against the horse but against the railroad, and the day is far removed when for long hauls any single vehicle that uses the open road can compete with long trains of coupled units drawn by a locomotive on rails. As the Motor World suggested on a previous occasion, if there must be truck tests, let them be practical tests—such tests as will show their superiority for the purposes for which they are designed and embodying the uses to which they are put by those who buy them.

The Chicago clubmen should "reason together" once more and seek to convince themselves that "Glidden tours" for trucks are neither wise nor generally wanted even though they may give temporary employment and some brief authority to a few men.

The Prospects for Self-Starters.

It may be a far cry to the day when the hand starting crank will be considered an absurdity, but the fact remains that in one way or another the motor starting problem is receiving an encouraging amount of attention at the present time. Furthermore, the requirements involved are being considered by a class of investigators who are naturally fitted to bring to light reasonable and economical solutions in the briefest possible time. With a very few noteworthy exceptions, automobile manufacturers, ostensibly at least, are paying little or no attention to the starting problem, just at present. What is being done along that line must be credited to manufacturers in the accessory field. That means that such developments as are "coming through" are those of specialists who are giving more or less expert and undivided attention to the task.

Progress in the direction of the self-

starting engine is revealed by some half-dozen new systems which have come to light within a couple of months. They include methods of compressing carburetted gas into the cylinders by artificial means in order to secure an initial charge, methods of forcing the engine to turn by one or two firing points by means of compressed air, and methods that are purely mechanical in their nature.

Nor must the fact be overlooked that the makers of ignition devices are concentrating a great amount of attention on the method of starting by the ignition of residual charges in the cylinders—a method that is thoroughly practical in its nature and effective a fair proportion of the time with one engine that is carefully adjusted and equipped with a carburetter which is perfectly suited to it. Indeed, the rapid increase in the use of dual ignition systems in itself may be taken as indicating that the public is increasing its demands for crankless starting and that where the device is simple enough it is willing to pay some additional cost, even though the system employed does not promise infallible results.

After all, recognition of the growing demand is the most hopeful sign of all. The automobile industry is so big and so burdened with the exactitudes of close competition that the rank and file of its producers are inclined to follow, rather than to lead, the market. Hence some developments, the value of which is perfectly obvious in theory, appear to be unduly slow in materializing. The task of stimulating the demand for new things thus is left to single-minded inventors and manufacturers who are dependent on a limited and highly specialized product. But there can be no question that as generous a portion of reward awaits the originator of the popular engine starter of the future as has been meted out to some of those who have been responsible for other accessories which, in their time, were correspondingly radical.

About the Sale of Motor Trucks.

Not to arouse memories which are either unpleasant or envious of the days when the measure of automobile salesmanship was expressed in terms of the expense account, be it reiterated mildly that times have changed. The robust and businesslike individual that typifies the successful motor car retailer of the present day is totally

different from his predecessor; he is a development of the industry, trained according to ideas that have developed while his experience was ripening. The best of his class are part self-made and part cultivated products. But because they are successful in handling pleasure cars it does not follow that they are fitted to undertake the marketing of the commercial car.

It is gradually being realized by those manufacturers who have ventured into the realm of the motor truck at all earnestly that its production and distribution are attended by conditions wholly different from those which govern the manufacture of the pleasure car. It is generally understood, of course, that it is a different sort of structure that is required for the chassis of the slow-moving, heavily loaded vehicle from that which is necessary where light loads are to be carried at high rates of speed. Rough analysis of the market also indicates this further point of difference that whereas pleasure cars must be distributed through individual sales practically without exception commercial vehicles more often are sold in equipments of several machines, and even when disposed of singly are sold with the idea that if they give satisfaction the order will be repeated. In other words, one striking point of difference between the two sides of the selling field is that in handling the commercial car the number of customers may be considerably smaller, while the importance of the sales, the need of retaining the good-will of the customer is proportionately increased.

As bearing on the question of salesmanship this is most important. The sale of commercial vehicles is in the growing stage just now and under the stimulus of a popular arousal to the possibilities of mechanical highway traction "order taking" sometimes becomes fairly easy. Growth of the lasting sort, however, is to be obtained only by the most prudent handling of customers, not merely with the idea of "landing them," but with the object of retaining their patronage indefinitely. To this end the aim must be to sell motor truck service rather than to sell motor trucks alone.

This implies first of all satisfactory repairs and maintenance arrangements—not necessarily suggesting that the dealer must also be a garageman, but that he must be competent and willing to oversee and advise in all points as to the operation of the machine. But in a larger and broader

COMING EVENTS

February 18-25, Minneapolis, Minn.—Minneapolis Automobile Show Association's annual show in National Guard Armory.

February 18-25, Newark, N. J.—New Jersey Automobile Exhibition Co.'s fourth annual show.

February 18-25, Brooklyn, N. Y.—First annual show of Brooklyn automobile dealers at 23d Regiment armory.

February 18-25, Cleveland, O.—Show in Central Armory.

February 18-25, Albany, N. Y.—Albany Automobile Dealers' second annual show in State Armory.

February 20-25, Portland, Me.—Sixth annual show in the Auditorium.

February 20-25, Cincinnati, O.—Cincinnati Automobile Dealers' Association's show in Music Hall.

February 20-25, Hartford, Conn.—Hartford Automobile Dealers' Association's fourth annual show in Foot Guard armory.

February 20-25, Omaha, Neb.—Third annual show of the Omaha Automobile Show Association in Auditorium.

February 21-25, Baltimore, Md.—Annual show in Fifth Regiment Armory.

February 24-27, New Orleans, La.—First annual show of New Orleans Automobile Club at Fair Grounds.

February 24-25, Keene, N. H.—Consolidated Motorcyclists' third annual motor vehicle show.

February 25-27, New Orleans, La.—New Orleans Automobile Club's annual Mardi Gras racemeet on Fair Grounds track.

February 25-March 4, Toronto, Canada—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-5, Shreveport, La.—Two days racemeet on fair grounds track.

March 4-11, San Francisco, Cal.—San Francisco Motor Club's show in Dreamland and Pavilion rinks.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building and Horticultural Hall.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

March 6-11, Houston, Tex.—Houston Automobile Dealers' Association's endurance run to San Antonio via Austin, and return.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

March 11-18, Cleveland, O.—Manufacturers and Dealers' Association's show in Central Armory.

March 14-18, Denver, Col.—Annual Show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 15-18, Louisville, Ky.—Louisville Automobile Dealers' Association's annual show in First Regiment Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

March 20-25, Youngstown, O.—Youngstown Automobile Club's show in Auditorium rink.

March 25-April 1, Pittsburg, Pa.—Pittsburg Automobile Dealers' Association's fifth annual show in Duquesne Garden.

March 27-30, Jacksonville, Fla.—Racemeet on Atlantic-Pablo Beach.

April 1-8, Montreal, Can.—Annual show in Coliseum.

sense the successful motor truck salesman's effort must be to obtain for his customer permanent benefits from the use of the vehicles which he sells. This necessitates a thorough comprehension of the transportation problem, ability to study and comprehend the customer's precise needs in the transportation line and absolute candidness in counseling him in the choice of his equipment and its maintenance. To sell pleasure cars successfully, the salesman must be a good merchant and a thorough automobile man. To sell commercial cars successfully, the salesman must be a good merchant, a thorough automobile man and a transportation expert besides; he must

be a thoroughgoing expert of a new type.

Such salesmen are fast being developed, will be developed in greater numbers as time goes on, but if manufacturers and dealers do not take pains to bring their own forces up to proper standards speedily the real power in determining the market for trucks will rest not in the salesrooms of their distributors but in the offices of independent experts—transportation engineers, as they are pleased to be known. Such experts already are beginning to figure in the placing of large truck equipments, and in due season their influence is bound to have more or less influence over the position of the retail dealer.

LAZANSKY HOLDS A CONFERENCE

New York's Secretary of State Invites Automobile Opinion and Obtains it—All Interests Air Views.

In order "to obtain a general conception of the ideas that are in the minds of those who are connected with the automobile interests, with a view of rendering the best possible administration of the motor vehicle law," to quote his own language, Edward Lazansky, Secretary of State of New York, on Thursday last held a conference with a considerable number of representatives of the various automobile organizations, to whom he had extended an invitation to meet him in Albany.

There were present two or three members of the legislature, representatives of a dozen or more automobile clubs, and spokesmen for several chauffeurs' organizations, Charles Thaddeus Terry, representing the National Association of Automobile Manufacturers; R. H. Johnston and I. M. Uppercu, representing the Licensed Automobile Dealers of New York; H. G. Andrews, representing the New York State Automobile Association, and the National Highway Protective Society, in the person of Edward S. Cornell.

In calling the meeting to order, Secretary Lazansky made a well-timed address and invited his guests to select a chairman from their own number if they so desired. The conference, however, decided that the secretary himself was the proper man to preside, and he did so.

While other important subjects were discussed, the points on which most stress was laid was the need for branch registration bureaus, in New York City particularly, and in other parts of the state in general. Mr. Johnston, Mr. Uppercu and Mr. Andrews, among others, all pointed out the great delay and embarrassment that results from the present system of requiring all applications for registration to be sent to Albany. Mr. Lazansky expressed sympathy but did not appear certain that the law permitted registrations to be received or licenses to be issued except at the capitol.

Mr. A. J. Ely, of New York, made the point that the law required that the number plates be delivered "without expense to the applicant," and contended that it was, therefore, contrary to the statute to require applicants to pay expressage for the delivery of their plates. It is understood that a friendly suit will be instituted to decide this point.

Mr. Andrews and Mr. Terry both also urged that the present law be let alone until it had been thoroughly tried out. Mr. Terry stated that "no piece of legislation in the state had received such thorough

consideration" as had the automobile bill, and declared that the present law was the result of "the most exhaustive examination that even the most punctilious could require." Mr. Terry declared that there is a distinction between owner and chauffeur, and held that the state "is not acting within its power when it taxes these owners for using the natural arteries of the state," the courts all over the country having held that the use of highways by the automobile is a natural and proper use.

Mr. Bender, representing the New York State Automobile Association, also combatted the proposal that owners be required to undergo examination and take out licenses. "The owner does not run his machine as an occupation," he said, "nor does he run it as a locomotive engineer for pay. He has just as much right to use the highway as the owner of a team of horses. If you are going to compel the owners of automobiles to take out licenses, then make the law broad and compel everyone else to do so. Let the man who drives a team or a trolley car pay a license fee also."

Representatives of the chauffeurs' organizations had a great deal to say. There were a surprising number of them, representing a surprising number of organizations. Practically all of them were anxious to have the chauffeur's license fee reduced from \$5 to \$1, although one or two of them did not object to the payment of \$5 for the original license but held that \$1 was sufficient for renewals. Most of them also were anxious to have owners licensed. A. J. Seaton, who represents the mysterious Chauffeurs' Federation of America, was among the number. It transpires that he is not a chauffeur but an old-line politician who drifted into the automobile business in Utica some ten years ago. He is the author of the so-called Ferris bills which, among other things, would define every one who ever touched a steering wheel as a chauffeur, and which would require that the head of the chauffeurs' bureau be a man of ten years' automobile experience, which is just about the extent of Mr. Seaton's experience, although he denied that he was a candidate for the job. Without blinking an eye, Seaton told the Secretary of State that the chauffeurs' federation has more than 12,000 members in the state of New York. He also endeavored to make himself "solid" with the secretary by opposing the idea of branch registration or license bureaus, as he stated that it was his belief that every application for a license, of whatever sort, should come under the eye of the Secretary of State himself, a remark that raised a shout of laughter. Seaton also eulogized the previous Secretary of State, but rendered the astonishing opinion that the present law "does not represent the minds of experienced men or of legal talent."

Representatives of the Benevolent Chauffeurs' League of America, the Professional

Chauffeurs Club of America, the Chauffeurs Protective Association and Chauffeurs' Union No. 257 also raised their voices. One of them outclassed Seaton by declaring that he spoke for 30,000 chauffeurs. Another, evidently unaware that Jack Johnson is a non-resident, cited that reckless negro as a reason why owners should be licensed; still another related some of his experiences with policemen. All, however, joined in the cry for a reduction of the chauffeur's fee to \$1, one of them expressing the opinion also that not only the owner but the owner's son should be licensed for being permitted to drive the owner's car, even though they might be accompanied by a licensed chauffeur. Some of the others present twitted the chauffeurs' representatives for their remarkable change of tune. They were reminded that when the Callan bill was being drawn they were quite anxious to have the fee set high, apparently in the belief that it would restrict their profession and make it a "close corporation," so to speak.

None of the spokesmen for the other organizations, however, objected to the reduction. The only one who opposed the suggestion was Assemblyman Albert S. Callan, the author of the present law. Remarking that he felt very much as if he were "attending a post mortem on his own child," he expressed the belief that "the driving of a car should entail certain qualifications on which there should be placed a financial premium." To reduce the fee would be to place the automobile, "a dangerous instrument," in the same category with guns, which any country boy can carry by payment of \$1.10. Concerning the licensing of owners, Mr. Callan said:

"I do not care to go into the question of the examination of owners; it has been my personal opinion that I have always favored it. I believe that every man who drives a car should be examined, but we must remember this, that the maximum of danger rests in the chauffeur, and the minimum of risk in the owner. Why? Possibly this question is open to dispute; none of us can take a positive stand. The owner owns the car; his money is invested in it; the chauffeur is the one who carries out his will and his wishes. I do not believe I am creating any breach of confidence when I say that Governor Hughes in discussing this matter felt that owners should be licensed, but he agreed with the policy which I have outlined to you. It is unfortunate, and I agree with you in that every man should be examined, and I will agree with you in the sense that the Secretary of State's powers should be brought out so that he might enforce them and thereby revoke a license if necessary."

The assemblyman also frankly admitted that one reason for the high registration fees specified in his law was due to the fact that the "state needs the money." He believed he was the original author of that

assertion. Elaborating his opinion, and giving a view for his innermost ideas, he cited the instance of a man who had protested that he had paid \$5 for a cheap number plate which was not worth anywhere near that value. "It is not the monetary value of the plate," said Mr. Callan. "It is the fact that it gives men a license to drive on the highways of the state of New York."

The other member of the legislature who spoke was Senator Walters, of Onondaga. He disclosed a splendid grasp of the situation and a fine sense of justice. "I want the chauffeurs to bear in mind the origin of the registration law," he said. "It was not to protect the public, except in one direction, i. e., by a system of identification. We did not register automobiles in the beginning because we wanted to raise revenue, but merely to raise a sufficient fund to maintain a department of identification. To identify the owner of an automobile is a difficult process after an accident. That was the foundation of the motor vehicle law. The next step was the raising of revenue, but identification was the fundamental principle of the whole thing. You cannot legislate safeguards into the operation of vehicles any more than you can legislate morals into a person. The fundamental notion is identification, pure and simple. I was present at all of the hearings on the Callan law, and on the twenty or thirty other bills, and I desire to say that the idea never entered our minds at that time that the automobile was a terrible instrument of death, such as the chauffeurs now would lead us to believe is the case. I would sooner put my wife on the seat of my car than I would put her on the back of a team of horses. The team is far more dangerous an instrument. It is absolutely beyond her control; she has the minds and strength of two animals to contend with."

For a Ten Days' Motor Truck Tour.

Although several conferences with truck manufacturers resulted in a conflict of opinion, the contest committee of the Chicago Motor Club has voted to proceed with the promotion of the New York-Chicago truck contest, which first was bruited several weeks ago but was held up pending the "sounding" of the trade. Originally it was planned to start the tour from Chicago and finish it in New York, but the new program is to reverse the route. Ten days probably will be allowed for the 1,000 miles tour, July 19-29 being the tentative dates selected.

Batchelder to Spread A. A. A. Gospel.

A. G. Batchelder, chairman of the A. A. A. executive committee, left New York on Saturday last, 18th inst., for a trip that will reach to the Pacific Coast. His purpose is to spread the gospel of the A. A. A. in all of the big cities in the West and South.

MERZ WINS PANAMA-PACIFIC RACE

**Indiana Man Triumphs Despite a Flat Tire
—Dingley and Bigelow Capture the
"Curtain-Raisers."**

With perfect weather conditions, in marked contrast to the snow-bound and shivering Eastern metropolises, the initial road races of the season were run off in California, mid warmth and sunshine, on Washington's birthday. Formerly known as the Portola races, they were this time styled the Panama-Pacific races and were run on a course of 10.9 miles which forms an irregular parallelogram in the valleys and foothills of Alameda county between San Leandro and Hayward.

When, at 9:15, the light cars were sent away in their 98 miles grind, the grandstand and the natural amphitheater formed by the surrounding hills were fairly crowded. Five cars lined up for the start and were sent away at one minute intervals, Charles Bigelow at the wheel of a Mercer being the first of the quintet to leave and incidentally the first to finish. He was never headed and covered the nine circuits of the course in 1:42:54. Cooper in a Maxwell was second and Uhrandt, driving an E-M-F, slid into third place.

In the race for stock cars of from 301 to 600 cubic inches displacement, and which was scheduled for 14 laps or slightly over 152 miles, there were seven starters, including Bigelow in the Mercer, with which he won the former race. The race early devolved into a sort of a three-sided duel between the two Pope-Hartfords, driven by Jack Fleming and Bert Dingley, respectively, and Chas. Merz's National. Fleming attempted to make a runaway of the race, and succeeded in holding first place up to the tenth lap, with his team mate a good second. In the eleventh lap Merz had overhauled the leader in time though not in position, and Dingley promptly "lit out" after him. His chase was the sensation of the day, and though he passed every other car in the race, Merz hung grimly to the lead and finished first on a flat tire, with Dingley in his Pope-Hartford just 40 seconds behind him in second place. Fleming was third.

There were eight entrants in the free-for-all at 160 miles, and this also proved a duel between Dingley with his Pope-Hartford and Merz in a National, with the exception that the former took no chances and forced the pace for the whole distance. Dingley beat Merz out by only a few seconds and Fleming in the other Pope-Hartford was third.

Berger Again Heads the Quaker City.

Very little competition marked the annual election of officers of the Quaker City

Motor Club, which has its home in Philadelphia, Pa. L. D. Berger was re-elected as president and the new officers are as follows: Vice-presidents, J. Fred. Betz and Paul B. Huyette; secretary, A. T. James; treasurer, Edwin H. Lewis. Following is the personnel of the board of governors: G. Hilton Gantert, W. Moseley Swain, M. E. Brigham, George E. Potts, P. D. Folwell, Evans Church, Fred C. Dunlap, J. C. Bartlett and George M. Graham.

Tag Makers May Have to Sue for Money.

It is probable that before the makers of the New York license plates, which have been the cause of much criticism, are paid for their work they will have to sue for the money. Quayle & Co., engravers, of 414 Madison avenue, New York City, whose contract is a holdover from the Koenig administration, receive 37 cents a pair for the plates. The price is the same as was received for the plates that all New York motorists carried last year, but the new markers are an even less suitable product.

Kansas City Club Chooses Officers.

George H. Davis was chosen president of the Kansas City Automobile Club at the annual meeting of that organization, which was held on the 9th inst., in the Missouri town for which it is named. Secretary W. P. M. Stevens and Treasurer J. H. Brockway were re-elected. The new vice-president is Webster Withers, Jr. The directors chosen are H. G. Blakeley, C. A. Muehlbach, R. L. Kidner, Judge Harry J. Kyle, H. T. Abernathy and I. E. Bernheimer.

Washington Re-Elected Tampa's President.

The Tampa (Fla.) Automobile Club's annual meeting resulted in the re-election of Capt. C. S. Washington as president. W. B. Powell was elected secretary, and B. M. Reed became treasurer. H. S. Hampton is attorney for the club and the personnel of the board of directors is as follows: B. M. Reed, L. B. Giles, H. E. Snow, Dr. S. W. Allen, Fred Ferman, C. E. Allen and C. E. Ball.

Chicagoan Becomes Technical Chairman.

F. E. Edwards, of Chicago, has been appointed chairman of the American Automobile Association's technical committee. He succeeds Alden L. McMurtry, of New York, who, however, remains the Eastern member of the committee. Later a representative of the Pacific Coast will be added to the committee. The chairmanship just has been made a salaried office.

Texas Gives Birth to Another Club.

The Guadalupe County Automobile Club has been formed in Seguin, Tex., with the following directors: L. T. Holmes, Alfred Crook, Max Starcke, Hyman Bartholomoe, R. L. Wupperman, H. W. Schutze, F. H. Schriver, W. Bauer and William Stein.

Local Show Season Reaches Highwater Mark

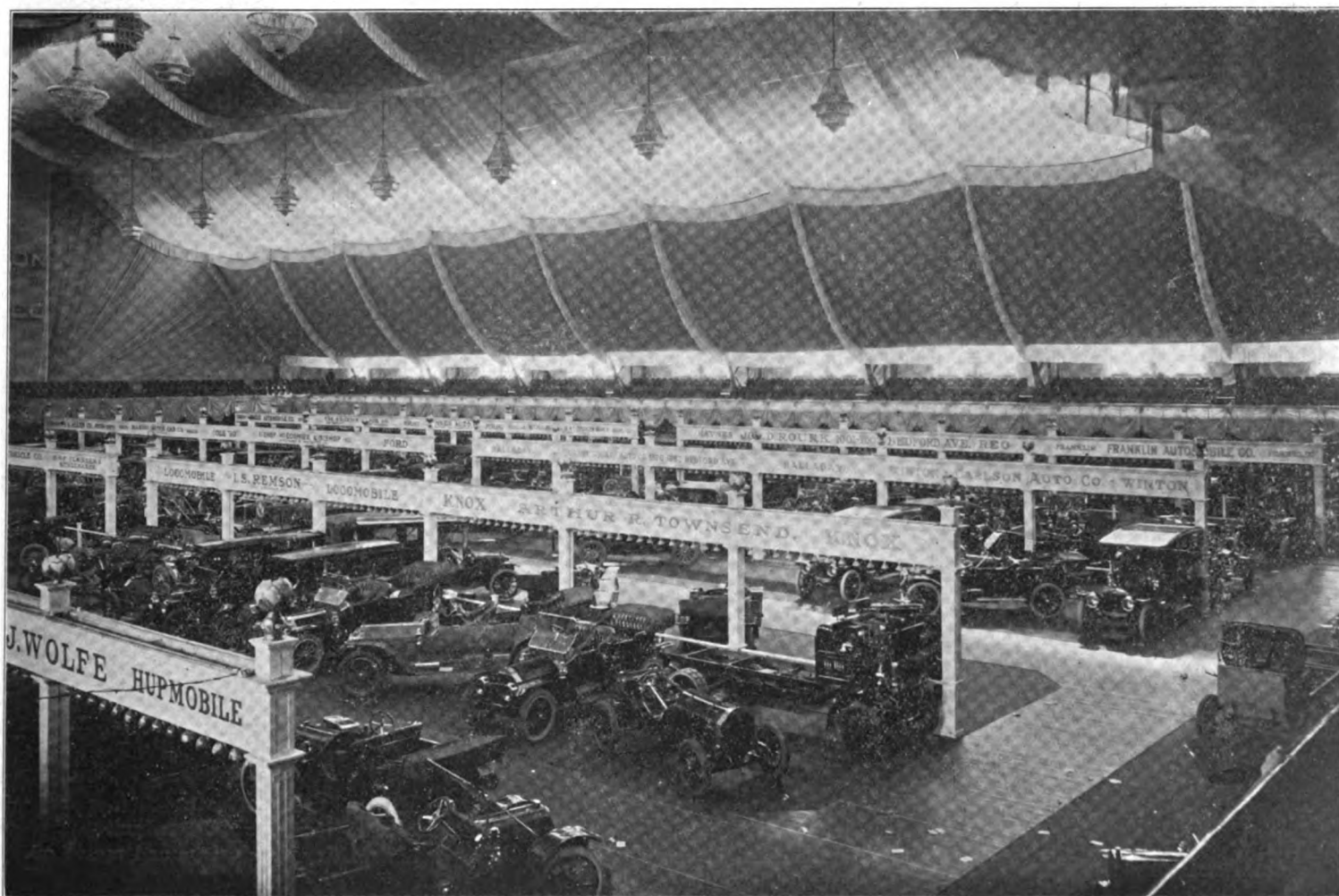
Brooklyn Dealers do Themselves Proud at Their First Show

"I can't get 'em up—I can't get 'em up," blared the bugles in the 23d Regiment armory, and while this was perhaps incongruous in that they could get them up (as was proven by the crowd that was on hand) and that it was manifestly the wrong time

the present show, which will hold the boards until the end of the week.

The decorative scheme is superb. Passing through the massive steel doors of the "Pride of Brooklyn's" armory, the visitor encounters a long lobby, perhaps 200 feet

or so big crystal electroliers serve to make the drill hall as light as day. Four rows of white columns, topped with and connected by white beams upon which palms and ferns "grow" in abundance, divide the floor into five "alleys," in which the 41 ex-



23D REGIMENT'S HUGE ARMORY AS TRANSFORMED FOR BROOKLYN AUTOMOBILE DEALERS' SHOW

for reveille, it then being 7:30 p. m. on Saturday evening, 18th inst., the music served its purpose, which was to herald the official opening of Brooklyn's first automobile show. The idea of an automobile show in the City of Churches is far from new; the project had been in view for a number of years, and once, some four years ago, it really seemed as if the ice would be broken and an old skating rink made to blossom out into a full-fledged show. But the venture fell through and the since-accumulated enthusiasm all is centered in

in length, which is a veritable bower of birch bark. Over this, wistaria and roses are trailed in bewildering profusion, while myriads of pink and white incandescent lights, artfully concealed, increase the illusion and give the impression of a summer garden. The main hall, in which the show is staged, is little less striking. A canopy of a delicate shade of pink, studded with thousands of "tungstens," covers the cold steel girders of the roof and hangs low over the balcony and side walls. Like miniature pagodas hung on high, a dozen

hibits of automobiles are arranged. Twenty accessory exhibits, of which five are completely foreign to automobiles, embracing as they do three brands of vacuum cleaners, a display of Paris frocks and a stand where liquid refreshment of the non-alcoholic variety is vended, are ranged around the side walls and separated by chaste white railings. There also is one exhibit of motorcycles.

The total number of exhibitors is 62, of which 35 stage pleasure cars, six show commercial vehicles and the remainder ac-

cessories. The aggregate of trucks on the floor is 11, and of pleasure cars 94, making a grand total of 105 complete cars exhibited. The show is still further increased by the presence of seven stripped chassis, some polished and some painted. The list of exhibitors, which is composed entirely of local dealers, is as follows:

M. J. Wolfe, Hupmobile; Rainier Motor Co., Rainier; Packard Motor Co., Packard; Corbin Motor Vehicle Co., Corbin; Otto Motor Car Co., Otto; Montauk Garage; Pope-Hartford; I. C. Kirkham, Maxwell and Columbia; Kissel Kar Co., of Brooklyn, Kissel; Arthur R. Townsend, Knox pleasure and commercial cars; I. S. Remson Co., Locomobile; Carpenter Motor Vehicle Co., Garford, E-M-F and Flanders; Detroit Cadillac Motor Co., Cadillac; Brun Automobile Co., Hudson and Chalmers-Detroit

pleasure cars and Victor trucks; Peerless Motor Car Co., Peerless; A. W. Blanchard, Fiat, Oldsmobile and Herreshoff; Lozier Motor Co., Lozier; Carlson Auto Co., Winton; Grant Square Auto Co., Halladay; Bishop, McCormick & Bishop, Ford and Cole; Marion Motor Car Co., Marion; I. M. Allen Co., Stevens-Duryea; Buick Motor Co., Buick pleasure and commercial cars; Peerless Garage & Sales Co., Stearns and Mercer; Stoddard Motor Co., Stoddard-Dayton; R. M. Owen & Co., Premier; S & V Motor Co., White pleasure and commercial cars and Thomas pleasure cars; Franklin Automobile Co., Franklin; Jos. D. Rourke, Reo and Haynes; Mitchell Motor Co., of New York, Mitchell; Bonner Auto Co., Overland pleasure and commercial cars; Croxton Motor Co., Croxton; Woods Automobile Co., Oakland; Sterling

Place Garage & Sales Co., Marmon; Motors Engineering & Sales Co., Kelly trucks; Farrell Auto Co., Beyster-Detroit and Cass commercial cars.

Accessories are exhibited by P. M. Mariko & Co., Pastre's Auto Garage, Welch Grape Juice Co., Regenbald & Stanley, Regina Vacuum Cleaner, Schaap Auto Co., Reliance Ball Bearing Door Hanger Co., Coney Island Automobile Club, Ryder-Driggs Co., J. Alexander Mfg. Co., Monarch Vacuum Cleaner, Newmastic Tire Co., Julius Bindrim, A. H. Patterson, Y. M. C. A. Automobile School, Carwalt Co., Keen Starter Co., Brooklyn Auto Top Co., H. Duhamel & Sons, Martin-Evans Co. and Frederick Loeser & Co.

Motorcycles of three brands—Indian, Pierce and New Era—are shown by A. H. Patterson.

Hartford Draws Upon Holland and Japan for Decorative Themes

Larger and more gorgeous than ever before, the fourth annual show of the Hartford (Conn.) Automobile Dealers' Association was opened on Monday last, 20th inst., in the Foot Guard Hall, and will continue till the end of the week. Even last year the big hall was a tight fit for all the exhibits which were crowded into it, and the present show, which embraces the displays of some 40 exhibitors, 19 of whom have an average of approximately four cars each on view, has taxed the ingenuity of the managers to the utmost. Partitions were ripped out, additional platforms were built and every available inch of space was utilized.

Holland, the land of windmills and wooden shoon, and Delft blues was chosen as a model for the decorative scheme, and the main floor, including the galleries on three sides of the hall, have been handsomely decorated in accordance. Running around the side walls for a height of 14 feet a panorama view in fresco effects depicts fields, dykes, windmills and cows. Men and women, life size, in their quaint and picturesque old world costumes, add a touch of the realistic to the paintings.

The sky is the finishing touch to the

elaborate decorations. Frames upon which white canvas is tightly stretched completely hide the unsightly rafters of the roof, and in the center there is an immense dome finished in blue and on which stars are picked out in gilt. Exhibits on the main floor are marked by white posts with iron frames atop, in which bronze bells, on which the exhibitors' names are lettered in blue, are suspended. To further carry out the picturesque effect the attendants are costumed as Dutch children with their long yellow hair and brown cloth jackets and flapping pantaloons.

In the basement the decorations are entirely different; there are lanterns and fans and parasols, and the whole effect is that of a Japanese garden with its cherry blossoms and globes of gold fish. The list of exhibitors is as follows:

Brown, Thomson & Co., Lozier, Cadillac and Stevens-Duryea; Capitol City Auto Co., Mitchell; Miner Garage Co., Pierce-Arrow; Russel P. Tabor, Reo; Palace Auto Station Co., Inc., Thomas, E-M-F, Flanders and Waverley electric; R. D. & C. O. Iritton, Maxwell and Columbia; S. A. Foster & Co., Rambler and Regal; Buick Garage Co., Buick and Winton; Electric

Auto Station Co., Baker electric; Skinner Bros., Stearns; Elmer Auto Co., Ford; J. T. Curtiss & Co., Velie 40 and Hupmobile; A. W. Scoville, Stanley steamer; Dunbar Motor Co., Elmore; Kaeser & Wilbur, Empire; New England Garage Co., Cutting; E. H. Harris, Overland; F. H. Strong, Schacht; Firestone Motor Car Co., Firestone-Columbus.

Accessories: Hartford Times; The Automobile Lighting Co., sundries; Compressed Gas Tank Co. and Palace Auto Station Co.; Hartford Auto Boat & Supply Co., auto supplies; Baldwin Stewart Electric Co., electric accessories; Finch & Hayes, Merkel and Thor motorcycles; Post & Lester Co., sundries, Aetna Life Insurance Co., insurance; Smith-Worthington Co., leather goods; Travelers' Insurance Co., insurance; E. J. Todd Rubber Co. and T. R. Shannon, sundries; Charles Miller Co., supplies; Autogenous Welding Co.; Hartford Electric Light Co., electric specialties; Myhtib Rubber Tire Preserving Co.; E. P. Clark, pumping and power plants; Bi-Motor Equipment Co.; Martin Ice Cream Co.; G. Mills Harris, New York safety chest; Hart Gas Light Ignitor Co., sundries; Keystone grease and motor oil.

Martial Music Inaugurates the Show at the State Capital

The Hudson River city of Albany, the capital of the state of New York, where automobile and other laws are made, is this week in the throes of its annual automobile show, the function being the second effort of the Albany Automobile Dealers' Association. The state armory is the building in which the show is staged; it was opened Saturday night last, 18th inst., and will continue the full week. The members of the Dealers' Association have worked for the success of the show and

the size of the crowd which attended the opening ceremonies at the inauguration of the exhibition was a reward for their zeal.

To the strains of martial music, the lights were switched on at eight o'clock and revealed the big drill shed transformed into a gorgeous show room. Yards and yards of green and white diaphanous material and thousands of American flags are suspended from and cover the steel girders of the roof; the walls are decorated with similar material and the aisles are

marked by potted plants, hanging jardinières and flowers. Opposite to and facing the entrance there is an arbor of smilax and other flowers.

There is much of interest at the Albany show, and while all of the cars on view are an old story to those who live within range of the New York or Chicago shows, most of the exhibits contain something new to Albanians. Included in the list of exhibitors are the following:

Albany Garage, Simplex, Palmer &

Singer and Peerless pleasure and commercial cars; J. P. Ketcham, Packard; Albany Hardware & Iron Co., tires and accessories; C. Sutherland Ranson, Lozier, Stevens-Duryea and Hudson; Buick Motor Co., Buick pleasure and commercial cars and Welch-Detroit pleasure cars; Albany Ex-

change, Pullman, Chadwick and Sampson; Wright-Rye Motor Co., White and Overland pleasure cars and Brush pleasure and commercial cars; John Kingsbury Co., bodies, tops and supplies; United Motor Co., Maxwell, Columbia and Sampson; Central Automobile Co., Ford, Paterson

and Knox; James Goold Co., Hart-Kraft commercial cars; P. J. Murray, Interstate; Troy Automobile Exchange, Pierce-Arrow; C. F. Weeber Mfg. Co., E-M-F, Flanders and Haynes; Schupp & Sones, Oakland, Oldsmobile and Marion; Rose & Kiernan, insurance; Cantine & Rice, insurance.

Newark Show in Attractive Setting and With Women's Orchestra

Under a canopy of delicate blue and white that softens the gaunt lines and adds cheeriness and warmth to the interior of

as a stage for the Empire Women's Orchestra, which was brought from Boston for the occasion. In addition to the in-

automobiles, are shown by four exhibitors in six varieties. The list of exhibitors and their products is as follows:



GENERAL VIEW OF THE NEWARK (N. J.) SHOW IN THE FIRST REGIMENT ARMORY

the First Regiment armory, the fourth annual show of the New Jersey Exhibition Co., was opened on Saturday night, 18th inst., in Newark, N. J., and will continue to the end of the week. Long strings of incandescent bulbs, suspended from the ceiling, and three great crystal electroliers, are the chief illuminatives, while individual signs in the form of old style lamp posts with triangular tops and pale yellow glass shed a soft glow over the exhibits. Gilded railings, hung with green bunting, separate the spaces which are further embellished by potted palms and ferns. An elaborate band stand, situated in the center of the building and adorned with an abundance of blue and white and gold draperies, serves

as a stage for the Empire Women's Orchestra, which was brought from Boston for the occasion. In addition to the instrumental music, several vocal artists lift up their voices several times each day. There was a real "jam" on opening night, and the attendance during the subsequent evening sessions has proven the popularity of the exposition, though the afternoon crowds are rather meager.

The total number of exhibitors aggregates 80, of which number 50 exhibit 58 makes of cars, including three brands of trucks, and 26 show accessories. Among the cars on view there is but one newcomer, the Veerac, a light delivery wagon made by the Veerac Motor Co., Minneapolis, Minn., and equipped with a two-cylinder opposed air-cooled two-cycle motor. Motorcycles, the "little brothers" of the

Automobiles: Apgar & Co., Newark, N. J., Lion; Atterbury Motor Car Co., Buffalo, N. Y., Atterbury cars; Autocar Sales Co., East Orange, N. J., Autocar; Alex. Brunner, Newark, N. J., Kline; E. D. Carlough, Newark, N. J., Franklin; Central Motor Car Co., Bloomfield, N. J., Regal; Commercial Maintenance and Motor Co., Newark, N. J., Atlas and Grabowsky; Correja Motor Car Co. of N. J., Newark, N. J., Correja; Crescent Auto Co., Jersey City, N. J., Mack trucks; Detroit-Cadillac Motor Car Co., Newark, N. J., Cadillac; Elliott Ranney Co., The A., Newark, N. J., Hudson; Wm. W. Elder, Newark, N. J., Abbott-Detroit; Electrical Maintenance & Repair Co., Newark, N. J., Detroit-Elec-

tric; Ellis Motor Car Co., Newark, N. J., Pierce-Arrow; Fiat Automobile Co., New York City, Fiat; Harmon L. Fink, Newark, N. J., Elmore; Green Motor Car Co., Locomobile; A. J. Hague, Jr., Newark, N. J., Inter-State; Haynes Auto Co., Newark, N. J., Haynes; Johnson Auto Conveyance Co., Newark, N. J., Johnson Silent; Koehler Sporting Goods Co., Newark, N. J., Koehler and Hupmobile; Lee Automobile Co., Newark, N. J., De Tamble; Linkroum Automobile Co., Newark, N. J., Winton; Lozier Motor Car Co., New York City, Lozier; F. L. C. Martin Auto Co., Newark and Plainfield, N. J., Alco and Mitchell; J. W. Mason, Newark, N. J., Maxwell and Columbia; J. J. Meyer, East Orange, N. J., Auburn; H. J. Molihan Auto Co., Newark, N. J., Mercer; N. J. Automobile Co., Inc., Irvington, N. J., Mercer; N. J. Motor Sales Co., Newark, N. J., Regal; N. J. Overland Co., Newark, N. J., Overland; O'Neill Motor Car Co., Newark, N. J.; Paterson; Oldsmobile Co. of New York, New York City, Oldsmobile; R. M. Owen & Co., Newark, N. J., Reo and Premier; Packard Motor Car Co., of New York, Packard; Paddock-Zusi Motor Car Co., Newark, N. J., Chalmers; Peerless Motor Car Co. of New

York, Peerless; J. M. Quinby & Co., Newark, N. J., Isotta-Fraschini, S. G. V. and Simplex; Rickey Machine Co., East Orange, N. J., Marmon; Reynolds & Erwin, Newark, N. J., Penn "30"; A. G. Spalding & Bros., Newark, N. J., Stevens-Duryea; Stoddard Motor Co., Newark, N. J., Stoddard-Dayton; Studebaker Bros. Co. of New York, Studebaker, E-M-F and Flanders; E. R. Thomas Motor Branch Co., New York City, Thomas; Veerac Sales Co., Paterson, N. J., Veerac; Waring Motor Car Co., Newark, N. J., Marion; Wallace-DeWilde Co., Newark, N. J., Cole "30"; Weldon & Bauer Co., Newark, N. J., National; West Side Garage, Newark, N. J., Moon; Woolstone Co., East Orange, N. J., Oakland.

Accessories: Alex. J. Ackerman, Jersey City, N. J., overhead automobile washer; Col-Mac, Newark, N. J., repairing devices; Dakota Milling Co., Newark, N. J., metal polishes; Economy Auto Supply Co., Newark, N. J., supplies; Essex Storage Battery & Supply Co., Newark, N. J., storage batteries; Gilbert & Barker Mfg. Co., Newark, N. J., underground gasoline tanks; G. O. Graves & Co., Rahway, N. J., bodies; Hardman Tire & Rubber Co., Belleville, N. J.,

Hardman tires; L. Lawrence & Co., Newark, N. J., automatic engine starter; Meteor Gas Co. of New York, acetylene gas tanks; Meyers Bros., New York City, novelties; National Oil & Supply Co., Harrison, N. J., lubricants; Newark Construction Co., Newark, N. J., garages; Newark Glass Co., Newark, N. J., lubricants; N. J. Auto Top Mfg. Co., Newark, N. J., tops; N. J. Motor Equipment Co., Elizabeth, N. J., carburettors; N. Y. Auto Top & Supply Co., Newark, N. J., tops; Norben Oil & Supply Co., Newark, N. J., lubricants; W. S. Sheppard, Newark, N. J., lubricants; Standard Oil Co., Newark, N. J., lubricants; J. Schreyer, New York City, road maps; Weston Mfg. Co., Newark, N. J., Weston shock absorbers; Wilcox Auto Co., Plainfield, N. J., detachable rims; Y. M. C. A., Newark, N. J., automobile school literature; Deppeler Agency, Jersey City, N. J.; Empire State Surety Co., Newark, N. J.

Motorcycles: Bush & Macdougall, Newark, N. J., Thor and Excelsior; W. J. Kluczek, West Orange, N. J., Harley-Davidson; H. J. Koehler Sporting Goods Co., Newark, N. J., Indian; Louis J. Wurth, Newark, N. J., Pierce and Reading Standard.

Cleveland's "Ninth Annual" is in Keeping With its Predecessors

To the strains of music dispensed alternately by an orchestra and a Gabriel automobile horn that played a variety of tunes, the ninth annual show of the Cleveland (O.) Automobile Show Co. was opened on the 18th inst. for a week's run in the Central armory. While other local shows have had their Parisian gardens, their Venices and their Japanese gardens, the Cleveland show, which is the only one which will be held in that city this season, is symbolic of no particular locality; the arrangement is styled just a plain "Beauty Garden." The "empyrean" is plain white, as are the side walls; lattice work over which vines bearing crimson blossoms are trailed covers the balconies and lends a touch of color that relieves the white. Pendant from the "sky" are several large clusters of incandescent lights and hundreds of arc lamps. Grass, represented by green burlap, has been tacked down in the aisles and exhibition spaces.

Of course such well-known local products as White, Winton, Peerless and Royal Tourist are shown and one newcomer, the Stuyvesant, built and exhibited by the Stuyvesant Motor Car Co., makes its initial appearance. It employs a six cylinder motor which rightly comes in the long-stroke class, having cylinders 4½ x 6, the car is supplied in a number of body styles ranging from four to seven passengers' capacity.

There are 47 exhibitors who stage upwards of 150 complete cars, while accessories are shown by 48 exhibitors and mo-

torcycles by seven, bringing the total number of space holders just over the century mark. Included in the accessory exhibits are the products of several local concerns, the most notable new devices shown being three which are exhibited by the Bingham Mfg. Co. These comprise a compensating carburettor, a compensating device consisting of three additional nozzles which may be attached to almost any make of carburettor, and a gasoline strainer designed to be placed in the gasoline line. The list of exhibitors is as follows:

Studebaker Automobile Co., E-M-F and Studebaker; Henry Motor Sales Co., Henry; Wingle Motor Car Co., Amplex; Koepke Motor Sales Co., Cutting; United Motor Cleveland Co., Maxwell and Columbia; Barger Automobile Co., Cadillac; Broc Electric Vehicle Co., Broc; Fidelity Motor Car Co., Moline; Brush-Sampson Cleveland Co., Brush and Sampson; White Co., White; Anderson Electric Car Co., Detroit electrics; Rauch & Lang Electric Co., Rauch & Lang electrics; Lozier Motor Co., Lozier; Elmore Motor Car Co., Elmore; Buick Motor Co., Buick; W. P. Ordner, Auburn; Kraus Motor Sales Co., De Tamble; Hupp-Yeats Electric Co., Hupp-Yeats electrics; Joseph Greenwald, Marmon and Waverley electrics; Hupp Motor Sales Co., Hupmobile; V. R. Hall Auto Co., Cartercar; Ford Motor Co., Ford; Peerless Motor Car Co., Peerless; Olds-Oakland Co., Oldsmobile and Oakland; Pullman Motor Car Co., Pullman; F. B. Stearns Co., Stearns; Chisholm & Phillips Auto Co.,

Stevens-Duryea; Franklin Automobile Co., Franklin; Garford Co., Garford; Kissel Kar Co., Kissel; Lucas & Christianson, Mitchell; Edward B. Finch, Chalmers; Rambler Automobile Co., Rambler; Royal Tourist Car Co., Royal Tourist; Reo Sales Co., Reo; Velie Motor Car Co., Velie; Winton Motor Carriage Co., Winton; Euclid Automobile Co., Firestone-Columbus and Columbus electrics; Auto Sales Co., Crow and Overland; Stuyvesant Motor Car Co., Stuyvesant; Western Reserve Motor Car Co.; Standard Automobile Co.; Lorain & Clark Garage; American Auto Sales Co.; H. S. Moore, Stoddard-Dayton and National.

Accessories: Hammer & Hull, Horsey Mfg. Co., Perfection Spring Co., National Motor Supply Co., Lakewood Chemical Co., Kurtzner Radiator Co., Auto Body & Top Co., Visco Oil Co., Chas. Benson & Co., Cleveland Aplco Co., Diamond Rubber Co., Stein Double Cushion Tire Co., Couch & Seeley Co., City Auto Tire Repair Co., Way-Mitchell-Rigdon Co., Motz Tire & Rubber Co., Booth Demountable Rim Co., Bingham Mfg. Co., M & M Co., Brown Auto Carriage Co., Fiber Products Sales Co., Firestone Tire & Rubber Co., Bailey Co., B. F. Goodrich Co., D. E. Foote Rubber Co., Cleveland Electric Illuminating Co., Goodyear Tire & Rubber Co., Auto Lamp & Radiator Co., Leader Mfg. Co., B & B Mfg. Co., S. F. Bowser & Co., Collier & Sayle, Century Rubber Trading Co., Columbia Refining Co., H. W. Johnson-Manville Co., Leader Mfg. Co., Johnson &

Usher, Chas. E. Miller, MacAdams Co., National Motor Supply Co., National Refining Co., Jas. F. Patton, Pennsylvania Rubber & Supply Co., Standard Top & Equipment Co., Julius E. Strater, Vesta

Battery & Light Co., Wayne Oil Tank & Pump Co., Lion Oil Co.

Motorcycles: Morse Motorcycle Co., Merkel and New Era; L. J. Mueller, Indian; P. J. Carleton, Emblem; Auto Elec-

tric Repair & Construction Co., Greyhound and Reliance; Vincent Bros., Minneapolis; Lister Bros., Harley-Davidson, Racycle and Yale; Casino Cycle & Supply Co., Thor and Excelsior.

Dayton's Exhibit Displayed Beneath the Outspread Wings of an Aeroplane

Dayton, O., the home of Stoddard-Dayton cars, Wright aeroplanes and numerous other products equally well known, was the scene, last week, of the second annual show of the Dayton Automobile Dealers' Association. The show, which was held in Memorial Hall, was opened on the 13th inst. and closed on the 18th. Contrary to usual practice, the managers did practically nothing in regard to the decorations in the main hall where the exhibits were staged, but left this part of the program to the individual tastes of the space holders, who went ahead "on their own hook" and supplied whatever embellishment they thought most suitable.

The foyer, however, was taken in hand by those in charge of the exposition and transformed into a bower of flowers festooned with greenery and dotted here and there with ferns, palms and bay trees. The principal decoration of the main hall, if it may be so called, was a life size Wright

aeroplane, which was suspended from the roof and dangled over the heads of the spectators. Included in the 15 exhibits of cars there was one, the Dayton electric, which was displayed for the first time at a 1911 show. It was a neat little coupe all finished in gray and showed up in marked contrast to the rest of the cars on view, of which the majority were finished in more somber colors. The remainder of the exhibits embraced six makes of motorcycles, shown by four exhibitors, and eight displays of accessories. The list of exhibitors is as follows:

Automobiles: Standard Automobile Co., Hudson and Marmon; G. W. Schroyer & Co., Cadillac, Pierce-Arrow and Columbus, and Hupp-Yeats electrics; Montgomery County Automobile Co., E-M-F, Studebaker and Studebaker electrics; Ooley Motor Car Co., Chalmers-Detroit and Packard; Homestead Auto Co., Oldsmobile and Oakland; Dayton Electric Car Co., Dayton

electrics; Dayton Automobile Co., Stoddard-Dayton; Miami Valley Automobile Co., Hupmobile and Reo; Hosler-Overland Sales Co., Overland and Locomobile; Peckham Motor Car Co., Buick, Peerless, White and Baker electrics; Dayton Auto Truck Co., Dayton commercial vehicles; Emerick & Sherrer, Ford and Rambler; Speedwell Motor Car Co., Speedwell; West Side Motor Car Co., Regal; Great Western Motor Car Co., Great Western.

Motorcycles: W. B. Schaeffer & Co., Indian; Jos. A. McKenny Auto Cycle Co., Excelsior; Harry Gross, Harley-Davidson and Thor; Niehaus & Dohse, Merkel and Racycle.

Accessories: Multiple Jet Carburetor Co., carburetors; Charles G. Fletcher, publications; Patterson Tool & Supply Co., tools; Standard Oil Co., lubricants; King Top Co., tops; Charles H. Moore Oil Co., lubricants; L. C. R. Storage Battery Co., storage batteries; Myers Top Co., tops.

First of Kansas City's Two Shows Proves a Stunning Affair

With a slightly greater number of exhibits than graced the occasion last year, the first of Kansas City's two rival automobile shows, which is really the second annual affair of the Kansas City Motor Car Trade Association's show, was opened in Convention Hall on Monday evening, 13th inst., and ran for one week. Citizens of Kansas City and other Missourians and Kansans, too, all helped to crowd the big building, and had it not been for their presence and the 70 makes of cars which were "parked" on the main floor and in the balconies, one might almost have thought they were in an Italian garden. But there were too many visitors and entirely too many automobiles to carry out the Italian scheme of things.

The not quite so youthful but still "insurgent" organization has "spread" itself in the matter of decorations, and last year's Japanese garden is eclipsed by this year's

exponent of the summer gardens typical to the Latin speaking countries. Festoons and draperies of colored hunting and flowers, real and otherwise, completely hide the roughness of the building and transform the place into the most gorgeous show room that Kansas City ever has seen.

From every staircase approach, great couchant lions looked upon the visitor, while near-marble Venuses, Daphnes and Nymphs with outstretched arms welcomed the stranger to the land of sunshine and fable. Far up among the southern smilax in the balcony a string band rendered soft Italian airs and beautiful maidens in Florentine attire served the visitors at an Italian tea garden.

Seventy makes of vehicles, all told, were represented and embraced 40 makes of gasoline and 10 makes of electric pleasure cars and 20 brands of gasoline and electric commercial vehicles.

The list of exhibitors was as follows:

Bruening Bros., Buick Motor Car Co., Greenlease Motor Car Co., Chalmers Motor Car Co., F. Cowherd, Jr., Motor Car Co., Columbus Buggy Co., McGee & Huckel, Ford Motor Car Co., C. L. Taylor Motor Car Co., United Motors Co., Kaw Valley Motor Car Co., Olds Motor Car Co., E. P. Moriarity Motor Car Co., Dey-Embrey Motor Car Co., Nolan-Ricke Motor Car Co., Studebaker Motor Car Co., Velie Motor Car Co., Stafford Motor Car Co., Albertson Motor Car Co., Rambler Motor Car Co., Clark Motor Car Co., Dodge Motor Car Co., Anderson Carriage Co., Winton Motor Car Co., Brush Motor Car Co., K. C. Rapid-Reliance Motor Car Co., Alden Sampson Motor Car Co., Oakland Motor Car Co., Avery Mfg. Co., J. I. Case Threshing Machine Co., P. & H. Motor Car Co., Carter Car Co., Davies Motor Car Co., Abbot-Detroit Motor Car Co.

"Roman Architecture" Sets off the Big Show in Minneapolis

Of the 93 makes of pleasure cars which are handled by Minneapolis (Minn.) dealers, 57 per cent. or 54 makes are displayed at the fourth annual show of the Minneapolis Automobile Show Association, which was opened on Saturday last, 18th inst., in the National Guard armory. Though this

is nine less than the number which was staged in the same building last year, the show as a whole is larger, the greater number of accessory and motorcycle exhibits more than making up for the loss. Had the attending crowd been clad in flowing white cassocks and sandals and had all the

modern products been eliminated, a visitor might have imagined himself or herself living at the time when Rome was in the height of its glory. For the decorations the old Roman types of architecture have been rejuvenated though the ancient customs have not.

Blue and gold streamers stretch from corner to corner of the roof and to the tops of Roman pedestals at the base of which rampant and regardless lions guard the commercial lines surrounding them. Two heroic statues representing "science" and "labor" stand watch at the entrance and greenery and flowers are much in evidence among the exhibits which are brilliantly lighted up by thousands of electric lamps. A single power boat, very much out of its element, six motorcycle exhibits, eight commercial car exhibits and 45 of pleasure cars brings the grand total of space holders up to 92. The list of exhibitors is as follows:

Pleasure cars: H. E. Wilcox Motor Car Co., Wilcox; O'Donnell-Wickers Co., Bergdoll; Maxfield Auto Co., Havers; Northwestern Auto Co., Ford; Petrel Motor Car Co., Petrel; Jackson Motor Car Co., Jackson; Ranger Auto Co., Auburn; Luverne Automobile Co., Luverne; R. W. Munzer & Sons, Oldsmobile; Abbott Motor Co., Abbott-Detroit; Haynes Automobile Co., Cole and Clark; Colby Motor Co., Colby; Fawkes Auto Co., Reo, American and Marmon; Clarke-Carter Auto Co., Cutting;

Regal Sales Co., Regal; Royal Auto Co., Glide; Great Northern Implement Co., Staver-Chicago and Herreshoff; Twin City Motor Car Co., National and Overland; Tri-State Auto Co., Inter-State and Paige-Detroit; Winton Motor Car Co., Winton; Northwestern Cadillac Co., Cadillac; Pence Auto Co., Buick; Joy-Wilson Sales Co., Parry; Heaney Auto Co., Halladay and Whiting; Studebaker, E-M-F, Flanders and Studebaker; Electric Car & Battery Co., Rauch & Lang electric; P. J. Downs Co., Rambler; Root & Co., Hupp-Yeats electric; Joy Bros. Auto Co., Packard; Barclay Auto Co., Chalmers; International Harvester Co., International; Pierce Arrow Motor Co., Pierce-Arrow; C. P. Kimball & Co., bodies; Electric Vehicle Co., Hupmobile; Kemp Bros. Auto Co., Waverley electric and Brush; Standard Auto Co., Locomobile; J. I. Case Thresh. Mach. Co., Case; Kissel Motor Car Co., Kissel; F. B. Stearns Co., Stearns; Columbus Buggy Co., Firestone-Columbus; Minneapolis Battery Co., Columbus electric; F. E. Murphy Auto Co., Mitchell; Wm. O'Connell; H. Paulman & Co., Pierce-Arrow; Deere & Webber Co., Velie.

Commercial vehicles: Kissel Motor Car Co., Schurmeier Motor Car Co., Genge Power Vehicle Co., Avery Co., H. E. Wilcox Motor Car Co., Pence Auto Co., Veerac Motor Co., Gas Traction Co., International Harvester Co.

Accessories: Electric Mfg. Co., Western Windshield Co., Tri-State Auto Supply Co., Tri-State Rubber Co., Zimmer Vacuum Renovating Co., O. Fenstermacher, Dahl Punctureless Tire Co., Ball Multi-Spark Plug Co., United Motor Supply Co., C. J. Smith & Co., Pure Oil Co., J. N. Johnson Co., Fawkes Auto Co., Tokeim pumps, Metal Shelter Co., Hollis Electric Co., Universal Rim Co., Hartford Rubber Co., Standard Oil Co., Wayne Oil Co., Racine Auto Tire Co., Oscar Bergstrom, H. J. Shotwell, Brown & Ingalls, Pence Auto Co., Brown & Igalls, Pence Auto Co., Shadegg Eng. Co., Brazee & Graves, National Motor Devices Co., Dingle Boat Works, Auto Engine Works, F. E. Satterlee, Northern Machinery Co.

Motorcycles: Edwards Cycle Co., Yale Motor Cycle Co., Ira Enmark, Hammer & Bisett, Minneapolis Motor Cycle Co., Thiem Mfg. Co.

Roof Garden Effect the Picturesque Feature of the Cincinnati Show

In the Cincinnati show, which opened in the Music Hall on the 20th inst., citizens of that Ohio city have the distinction of harboring a second annual function and an initial venture rolled into one. The seeming paradox of the statement is accounted for in that the present show, which will be closed on Saturday next, is the first attempt of the new Cincinnati Automobile Dealer's Association, while last year's show was sponsored by the Automobile Club of Cincinnati. Despite adverse weather conditions, the attendance on the opening night was large enough to warm the cockles of the exhibitors' hearts and a record week is looked for by the promoters.

The upper floor of the two on which the exhibition is staged is laid out as a roof garden with imitation brick walls and white lattice covered with smilax and crimson poppies. The lower is entirely different, and while it represents nothing in particular, it is an attractive anthology of imitation flowers set in a background of green burlap. The show is not confined merely to pleasure cars, there being five makes of

trucks represented in the 51 brands of cars which are displayed. Presented by Haberer & Co., one new commercial car, the Cino, marks an enlargement of the Cino line. The list of exhibitors is as follows:

Automobiles: Acme Automobile Co., E-M-F and Flanders; Atlas Auto & Supply Co., Jackson and Columbus electrics; Chas. Behlen Sons Co., Locomobile, Maxwell and Detroit electrics; Cadillac Co., Cadillac; Cincinnati Automobile Co., Peerless, Everitt, Pope-Hartford and Hewitt trucks; Citizens Motor Car Co., Packard; Robert C. Crowthers Auto Co., Elmore and Alco; L. C. Dennison, Winton; Eddy Auto Co., Case; Ford Motor Car Co., Ford; Franklin Auto Co., Franklin pleasure and commercial cars; J. K. Gilchrist Motor Car Sales Co., Matheson and Republic; Herschede Motor Car Co., Stoddard-Dayton, Rauch & Lang electrics and Rapid trucks; Haberer & Co., Cino pleasure and commercial cars; Hanauer Automobile Co., Pierce-Arrow and Corbin; Hughes Automobile Co., Krit; Imperial Motor Car Co., Stearns, White and Hupp-Yeats electrics; Jungclas

Auto Co., Overland, Palmer & Singer and Baker electrics; Kruse Motor Car Co., Marmon; Leyman-Buick Co., Buick pleasure and commercial cars; George C. Miller's Sons Carriage Co., Stevens-Duryea, Mitchell and Regal; Ohio Motor Car Co., Ohio; Olds-Oakland Motor Co., Oldsmobile and Oakland; Paynes Motor Car Co., Thomas and Hudson; J. H. Ratcliffe Auto Co., Chalmers-Detroit; Schacht Motor Car Co., Schacht; Charles Schiear Motor Car Co., National, Interstate and Hupmobile; Speedwell Motor Car Agency Co., Speedwell; Velie Motor Car Co., Velie.

Accessories: S. F. Bowser & Co., oil and gasoline tanks; Coughlin & Davis, supplies; Robert Hosford, storage batteries; Chas. H. Moore Oil Co., lubricants; Paragon Refining Co., lubricants; Julius E. Strater, Flentje shock absorbers; Time Test Tire Co., tire preparations; Wayne Oil Tank & Pump Co., oil and gasoline storage systems; Warner Pole & Top Co., automobile tops and supplies.

Motorcycles: Bumiller-Remelin Co., Indian.

Rival Shows, Running Simultaneously, Sharpen Interest in Winnipeg

In the city of Winnipeg, which is in the Province of Manitoba, the first annual automobile show to be held in that Canadian metropolis was opened on Monday afternoon, 13th inst. The exhibition was housed in the Cockshutt plow building under the auspices of the Winnipeg Motor Trades' Association and was closed on Saturday

night last, 18th inst. Lieutenant-Governor Sir Daniel McMillan was the dignitary who officiated at the opening and in the course of his speech, complimenting the management on the excellence of the show, he remarked on the transition from former methods of transportation when ox-carts, dog-teams and flat boats were the only

vehicles in use, and the "music" of the "Saskatchewan band" was heard throughout the Province, the said "music" being the screeching of wooden wheels on wooden axles, purposely left ungreased that the noise might prove "company" for the pioneers in the great solitude.

The building was tastefully decorated

and an unexpected crowd was on hand for the opening night. Though the show was not exceptionally large, it was fairly representative and numbered among the exhibits many of the better known American cars and several Canadian made products. Of course there was a "society night," and on this joyous occasion everyone connected with the show blossomed out in reach-me-downs and open-face clothes. The exhibitors and the products shown were as follows: Halladay Auto Co., Halladay; Tudhope-Anderson Co., Everitt "30"; Ford Motor Co., Ford; Walker Motor Co., Inter-State and Paterson; R. Kershaw, Brush; Haugh Bros. & Nellermore, Glide and Empire "20"; Breen Auto Co., E-M-F and Flanders; J. I. Case Threshing Machine Co., Case; Winnipeg Garage, Ltd., Cadillac and Franklin; Western Canada Motor Co., Packard and Overland; Central Garage Co., Knox, Thomas and Kissel; Joseph Now & Co., Peerless, Reo and Hupmobile; A. C. McRae, Mitchell and Regal; McLaughlin Carriage Co., Mc-

Laughlin-Buick and Rauch and Lang electrics; Canada Cycle & Motor Co., Russell-Knight.

Accessories: Dunlop Tire Co., tires; Central Garage Co., Firestone tires; Canada Cycle & Motor Co., supplies; Canadian Consolidated Rubber Co., "Canadian" tires; Goodyear Tire & Rubber Co., tires; Dominion Cycle Co., Merkel motorcycles; P. C. Hagerty & Co., Michelin tires and Hagstrom tire sleeves; John Millen & Son, supplies.

But the trade association's show was not the only one in Winnipeg. Some of the Canucks took a leaf out of New York's book, which is to say that they also had an "independent" show. Though both shows opened on the same day, and ran for the same length of time, the one which was held by the Independent Auto Show Association in the Bell Block was not thrown open to the public till some five hours later than that managed by the trade association.

The two floors on which the "independ-

ent" exhibition was staged were prettily decorated, and a big band was provided for the delectation of the visitors who crowded the aisles during the continuance of the show. Automobiles exclusively occupied the upper floor, while accessories, included among which were marine gasoline engines and a solitary power boat of the cruising variety, were displayed on the main floor. Accessories were shown by S. F. Bowser & Co., Imperial Oil Co., Remington Tire Co., Western Rubber Co., Wagner Motorcycle Co., James Stuart Electric Co., United Motor Supply Co., Disthe Mfg. Co., Zero Face Protector Co., Colonial Oil Co., and the Exchange Garage.

The exhibitors of complete cars and the products they displayed were: W. J. Reid & Sons, Republic pleasure cars and Van Dyke trucks; Jackson Motor Car Co. of Winnipeg, Jackson; Metz Canadian Agency, Metz; McRae Co., Mitchell; Mooney Auto Co., Warren-Detroit; Central Garage, Maytag.

New Haven's Two-Weeks' Show Housed in Skating Rink

Embracing 24 separate exhibits, ranging from automobiles and automobile accessories to motor boats and marine engines and clocks, New Haven's automobile show will close on Saturday, February 25th. Housed in a big building styled the Quin-nipiac ring, in which New Havenites have been wont to don roller skates, the exhibition is booked for a two weeks run. The stage setting is composed of a green lattice work covered with trailing chrysanthemums which serves as a disguise for the side walls. The ceiling is beautifully paneled in a yellow and white color scheme, and, together with the verdant lattice and

the floral decoration, presents a very brilliant spectacle.

Two of the exhibitors show marine engines and accessories, three have motorcycles on display and the remaining 19 exhibit complete cars, of which 26 makes are represented. The exhibitors of automobiles are: Skilton Co., Stanley steamer; E. C. Bull & Co., Buick; E. W. Squires & Co., Paterson; J. S. Griffin, Mitchell; George B. Clark, Lambert; White Motors Co., White; A. W. Kirk, Pope-Hartford; E. T. Hale, National; L. Howshield, Ohio; Holcombe Co., Franklin, Inter-State and Stevens-Duryea; Blever Motor Car Co.,

Maxwell and Columbia; D. Flint, Ford; George B. Wuestefeld Co., Stoddard-Dayton; Brown & Underwood, Cadillac; J. N. Boyce, Brush; F. W. Smith, Oakland; Rechert Auto Co., E-M-F and Flanders; Pardee & Ellenberger, Cole and International delivery cars; N. M. Whitfield, Overland and Reo.

The exhibitors of motorcycles and the products they show are as follows: James F. Cox & Co., Indian; M. T. Dill, Excelsior; Werley-Malay Co., M. M. Marine motors are shown by E. A. Fonda and George Thomas and accessories by the Post & Lester Co.

Colonial Colonnade and Pea Green Draperies at Davenport

With many of its exhibits "imported" from the Chicago show and the remainder from local dealers, the Davenport (Iowa) automobile show was opened on Thursday, 9th inst., in the Coliseum and was closed the following Sunday night after having "weathered" an unusually successful run. A chillness in the air and a threatening of the generosity of Jupiter Pluvius

failed to keep the crowds away and on opening night a record for attendance was made, which was not exceeded during the show's run. The decorations, consisting principally of a colonial colonnade partly covered with an abundance of pea green draperies, was pleasing in its simplicity and the tout ensemble presented an appearance of conservatism.

Among the brands of cars exhibited there were 16 different makes of gasoline pleasure cars, two makes of electric pleasure cars and one convertible, including the following: Ford, Velie, Inter-State, E-M-F, Flanders, International Harvester, Buick, Oldsmobile, Pierce-Arrow, Ohio electrics, Packard, Midland, Cadillac, Cole, Maxwell, Rauch-Lang, Halladay, White, Hupmobile.

Memphis Makes Its First Appearance on the Local Show Circuit

Preceded by an automobile parade, headed by a military band, the first annual show, given under the auspices of the Memphis (Tenn.) Automobile Club, was opened on Wednesday, 15th inst., in the Auditorium. The Memphis show was really the most pretentious local function that the South has seen, and being the first

event of the kind to be staged in that Tennessee city, a large crowd was on hand to witness the inauguration of the five days' session.

The spacious building was artistically draped in green and white, the color scheme representing the official colors of the Memphis Automobile Club. Near the center

of the hall a pergola decorated with Florida smilax, ferns and artificial carnations served as a hiding place for the orchestra, and the piece de resistance of the whole scheme was an immense floral center piece composed entirely of cut flowers, of which American beauty roses were greatest in evidence. Boxes and balconies alike were

literally covered with a profusion of potted plants and artificial flowers.

The majority of the products of the better known American builders were represented on the floor and ranged from little runabouts to limousines and from light

delivery wagons to the heaviest of commercial vehicles. Among the exhibitors were the Noble S. Bruce Co., Evander-Williams & Co., Memphis Automobile Co., Bloomberg Automobile Co., Stewart Automobile Co., Jerome P. Parker-Harris

Co., H. A. White Co. Lockwood & Co., Lytle Electric Co., Hazen Automobile Co., Memphis Storage Battery Co., E-M-F Memphis Co., McDonald Auto Co., and Standard Oil Co., of Louisville. The show was closed on Saturday night, 18th inst.

Swede Designs Motor Sled for Commercial Purposes

Probably no field of motor propelled vehicles offers as many opportunities for freak designs as that comprising the various kinds of motor driven sleighs. There are sleds, mounting a gasolene motor

named Hakanson, and which was tried out recently on the frozen surface of Lake Mala, near Westeras, in Sweden; it represents, however, an elaboration of the idea and marks about the first attempt to render

twin drums, resembling the paddle wheels of a side-wheel steamer but furnished with sharp-toothed steel paddles which dig into the snow and pull the sled along. It is claimed that this sleigh, propelled by a



SWEDISH MOTOR SLED TRACTOR THAT HAULS A TON 15 MILES AN HOUR

which are pushed over the hard-packed snow by the force of a "wind propeller"; others are dragged along by a form of suction turbine; still others utilize serrated rollers or toothed wheels as the propelling medium. To this latter class belongs a sled which has been invented by a Swede,

a motor-propelled ice vehicle useful for freight-carrying purposes.

As the accompanying illustration serves to show, the Hakanson sled consists of a motor covered by a hood and pivotally mounted upon two pairs of runners. The crankshaft is connected at the rear end to

motor of 25-40 horsepower, is capable of carrying 1,000 kilograms, or about a metric ton, at a speed of 15 kilometers an hour. This load may be distributed over one or more trailers, while the steering and handling of the motor is accomplished from the seat of the first sleigh.

Maidenhair Fern to be Feature of Boston Show Decorations

Instead of the Spirea Van Houtii, which furnished the central figure of last year's floral offering at the Boston show, this year's exhibition, which is to open on the 4th of March next, will be graced with a profusion of Australian maidenhair. In addition, ample use will be made of flowering plants, both real and artificial, many of the latter being illuminated.

Though the horticultural element will be dominant it will by no means constitute the sum and substance of the decora-

tive treatment of Mechanics' Hall. In Grand Hall, for example, the principal feature of the decorative scheme will be a series of 30 columns of ornate design, surmounted by gilded eagles, while the walls and balcony fronts will be paneled in red and gold. In Exhibition Hall, on the other hand, where the floral effect will be more pronounced, and a "garden atmosphere" secured by the use of much lattice work, the walls will be concealed by a series of oil paintings depicting the famous automo-

bile drives of the world. One innovation that promises to break into the monotony of the uniform decoration of the stands will be the use of adjustable standard signs bearing the names of the cars.

Although the main decorative scheme is confined to Mechanics' Hall, the "overflow" caused by the great demand for space, which will be staged in Horticultural Hall, will not be without its decorations. A system of transfers and a motor bus line will join the two sections of the show.

The Motor Truck and the Loading Problem

It is a curious reflection on human inconsistency that a business man who will work himself into a cherry red heat if one of his automobile delivery wagons is delayed half an hour by a punctured tire, in nine cases out of ten will be absolutely unmoved if the same wagon stands at the shipping platform two hours while its cargo is being sorted and stowed. Such a man—and he is a representative type—if told that it ought to be possible to pick up the loads in 20 minutes at the outside; that he could save the entire time of one out of every six machines by cutting down his loading time in the ratio indicated, probably would want to know what good that would do. He would then have one idle vehicle for every five busy ones—so where would be the gain?

The adoption of the motor truck under present business conditions is entirely a question of economy. One truck will replace two or three wagons and from two to four times as many horses; it will reduce the number of employees required for the transportation of a given amount of merchandise. Its advantages are self-evident, and the only problematical element about it is the administrative question. Motor truck builders and salesmen who urge the adoption of the commercial vehicle as an economical move must be prepared to have their ideas carried out to their logical conclusion. If a motor truck equipment is more profitable than a horse equipment, then it must be possible to render one motor truck system more profitable than another. How can this be done? How can existing systems be improved?

The answer is not far to seek. Much of the reformation in highway haulage for which the motor vehicle is going to be responsible, paradoxically enough, is due to manifest itself, not on the highway, where limiting traffic conditions already are manifest, nor in vehicle construction, which must be considered as having passed the period of revolutionary improvement—but right at the loading platform.

It is a signal manifestation of the growing strength of the motor vehicle movement that this should have been recognized already. But it is important that those who are most vitally interested in the motor truck as a manufactured and marketable product should early grasp the significance of the conditions surrounding its operation. Only in this way can its construction be made to keep pace with the requirements of service. The designer, the manufacturer and the dealer all must know the principles of economical opera-

tion before they can expect to compete in a market that is thoroughly established.

The motor truck will develop from now on by a process of natural evolution. What the wideawake producer has to do is to adapt it to specific conditions. But mostly he has to keep pace with the ceaseless demand of business progress for higher efficiency.

Mainly, of course, the efficiency of a motor truck system depends on the trucks, but the problem may be viewed in another



SAMPSON SAFE POWER HOIST

light. For instance, in the opinion of G. A. Wells, who is chief engineer of the Adams Express Co., and a man of thorough training and rare experience, the motor truck alone is not responsible for the amount of work that it can handle.

"Looking for the limits which restrict the amount of work which can be performed by a motor truck they are found to be governed largely by three elements," he says.

"1. The carrying capacity of the truck as to weight and volume of load.

"2. The speed at which it can be moved between stops.

"3. The capacity of the men at the terminals and their ability to load and unload the freight and of the men on the truck to make deliveries at intermediate points.

"Therefore it can be readily seen that to predetermine or calculate the cost of a day's or a month's service all the above

data and the cost on some basis of each item must be known. The best bases are, I think, first, the cost per minute of the entire item of truck and crew while in motion, which involves the cost of operation per mile, interest, depreciation, etc., and the crew's time; and second, the cost of the equipment per minute while not in motion, which consists of the interest on the investment and the value of the crew's time."

With reference to the third element, which, of course, determines the factor of loading time in any given case, the opinion of another recognized authority is worth quoting. He says:

"There is one important problem which still exists unsolved in all transportation systems. It has seriously handicapped the transportation of goods by water, and is today affecting the transportation of goods by rail to such an extent that radical changes must be made in a year or two if our great problem of transportation is to progress as it should in the years to come. Reference is made to the lack of terminal facilities which exists today in a very alarming manner. In a large percentage of our great transportation systems two axioms are recognized:

"1. That the efficiency of a transportation system is limited not by its carrying capacity but by its terminal facilities.

"2. That the essential factor in transportation costs is not the cost of hauling the goods but the expense of handling at terminal stations.

"Very few owners realize the importance of these facts as applied to their own installations of motor trucks and facilities which they have for loading them quickly at proper intervals, and also of unloading them with the least possible delay and expense."

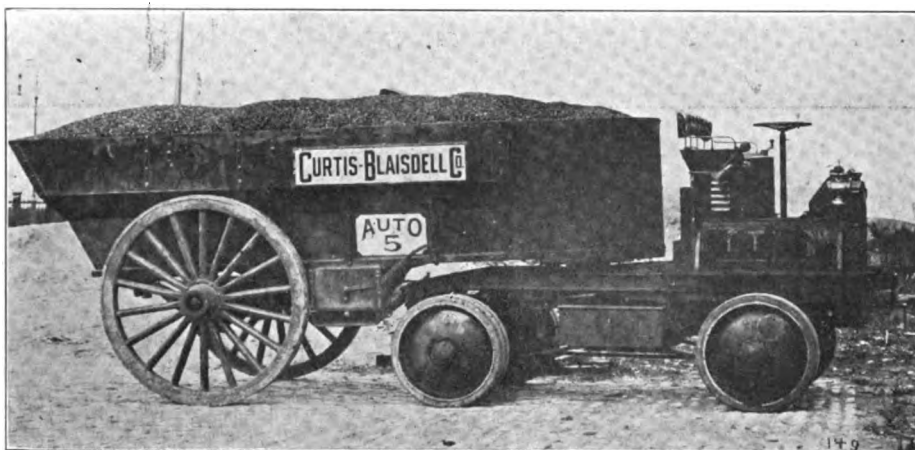
The importance of reducing the idle time in motor truck installations was developed in an article that recently appeared in these columns, in which the advantages of handling loads in bulk were emphasized, particularly with reference to the revolutionary movement in transportation that is characterized by the introduction of the "cart-ridge system," as it is called. Where repeated shipments are to be made with the same sort of merchandise, it was pointed out, a great time saving may be accomplished by the adoption of a system of sectional loading racks or other units, which may be changed at leisure at the point of original shipment, whether a loading platform, a packing room, or the delivery end of a chain of manufacturing ma-

chinery. Such units, once packed, can be placed on a motor truck or other vehicle to the handling of miscellaneous loads, there are other time-saving devices which

and arranging them after they have gravitated upon the truck. The ease and simplicity of this operation is evident from the accompanying illustration, which shows the quick loading methods employed by a cooperage company in handling barrels.

For the handling of heavy articles winches frequently are useful, and nothing is more natural than that on power-driven vehicles they should be mechanically operated. Truck manufacturers usually are willing to equip their products with such devices if required by the purchaser, but one prominent and highly successful distributor in New York State has established the precedent of putting power-driven winches on his electric trucks whenever the nature of the work contemplated requires them—and absolutely free of cost to the purchaser.

With gasoline trucks the most familiar method of installing a power winch is in connection with a special countershaft in

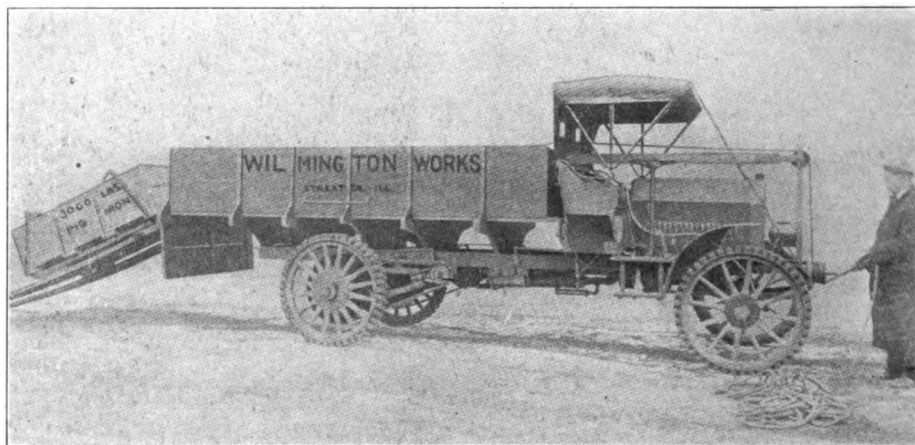


SIDE-DUMPING TRAILER WITH COUPLE-GEAR TRACTOR

with very small loss of time, unloaded with equal facility and returned empty to the shipping point. Indirect though the method may appear to those unfamiliar with the principle, it has been found that in many instances the time saved is sufficient to more than justify the entire cost of the loading units, enough, indeed, to pay return freight charges on the empty racks or units.

But while the use of packing units, of one sort or another, is applicable in many instances to motor truck operations, there are certain classes of haulage to which it is not applicable. Thus express and independent trucking concerns, contractors and others who are called upon to handle difficult sorts of merchandise and material at different times, to shift their routes frequently and to work on variable schedules, or no schedule at all, seldom are able to develop regular loading systems. It does not follow, however, that the profits of such operations need be depleted seriously by an exorbitant amount of waiting

may be applied which are well worthy of consideration.

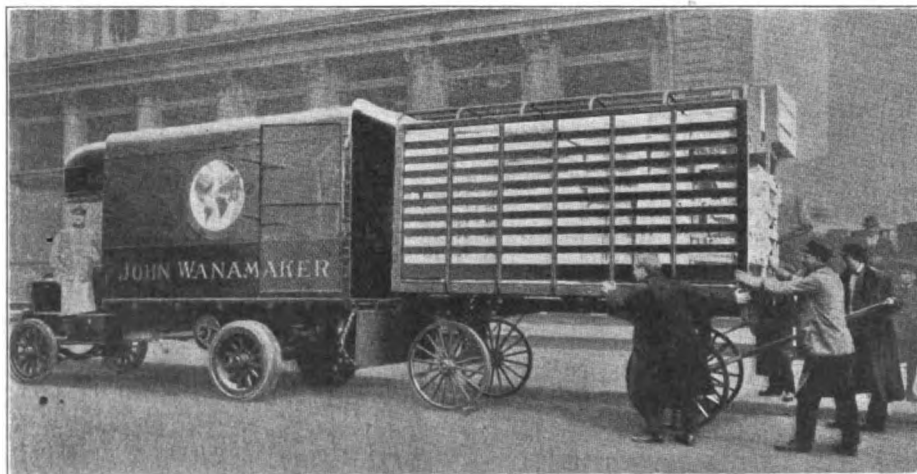


LOAD-HANDLING ARRANGEMENT ON AVERY TRACTOR TRUCK

For example, where material is to be loaded from a higher level than the truck it sometimes is possible to make good use

the gear box or with a special gear on the regular countershaft operating in train with a drum placed under the driver's seat, or sometimes running below the chassis and projecting at either side. The simplest method of all, of course, is to prolong the crank shaft through the front of the chassis and mount a drum on it.

A good example of the more elaborate style of installation is that which has been devised recently by a prominent truck builder in a machine designed for use in transporting safes. The winch drum is placed under the driver's seat and is driven from the transmission lay shaft. To operate the winch the gear shifting lever is put in the neutral position, when the drum is set in motion by moving a separate hand lever which serves to engage an internal expanding clutch in a special clutch drum. A contracting band brake on the outside of the clutch drum, pedal actuated, is used in controlling the winch. The operating arrangements are plainly shown in the illustration, which shows the winch in the act of lifting a 4½ ton safe. The direct



DEPARTMENT STORE SERVICE—LOADING AT ONE OPERATION

time, but rather to the contrary. While the "cartridge plan" is not often applicable

of skids, requiring no more manual labor than simply placing the units on the skids

pulling capacity of the arrangement is 4 tons at a speed of 60 feet per minute.

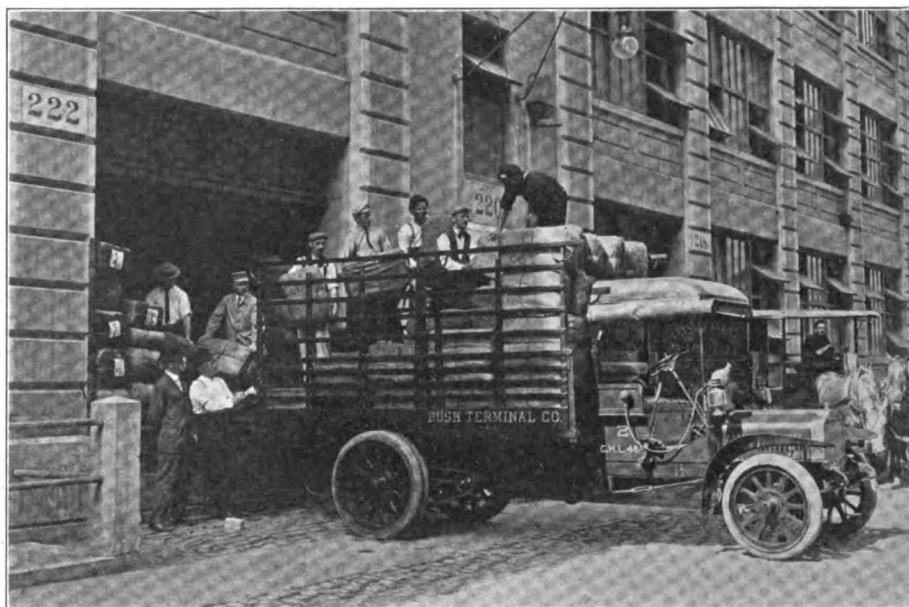
Machines which are intended primarily for the use of farmers frequently are equipped with a power shaft suitable for the attachment of a pulley, which is suitable for driving light stationary machinery. Where such an arrangement already is provided it is a simple matter to substitute a "nigger-head," or friction drum, as already indicated, which is useful for loading and unloading. Where the power shaft takes the form of a forward extension of the crank shaft a simple method of applying it to the loading of the trucks is to rig a tripod over the front end of the frame to support a loading block from which the rope is carried to a second block on the back of the cab, from which in turn it is led directly to the load. The latter may be hauled into the body by means of ordinary skids.

Of course, for many loading operations suitable stationary weight-handling devices may be employed, so that the use of such arrangements on the trucks is unnecessary. In other cases, however, some form of winch mechanism really is necessary, while in others, a light crane mounted on the truck will prove useful and economical. Such an arrangement is used by

of the accompanying pictures, for example, is shown a truck being loaded at a huge warehouse in Brooklyn, which has been built with the express object of reducing the handling of merchandise to a minimum. The elevator shaft being placed on the out-

able, always are worth considering in connection with the installation of new vehicles.

Labor-saving devices of this nature are economical both as time and labor savers, mechanical power always being cheaper



WAREHOUSE SERVICE—DIRECT HANDLING FROM ELEVATOR



LOADING BY GRAVITY—RAPID METHOD OF HANDLING BARRELS

one well-known British maker, who mounts a light davit crane on the platform over one of the rear wheels. With power supplied by the engine such a lifting arrangement may be used to swing weights either inboard or outboard and so is equally useful in loading and unloading.

Just here, one point is important to observe: that is that the design of shipping platforms and warehouses in general has much to do with the facility with which the loading operation may be handled. In one

side of the building it is possible to load directly from it to the motor truck, thereby saving the time and labor necessary where the shipping platform is remote from the point of delivery from the upper floors. Where it is possible to load directly into the truck, as in this instance, it may happen that no special load-handling appliances will be required. More frequently, however, the motor truck equipment must be made to fit existing conditions. That means that winches, either permanent or remov-

and more satisfactory to handle than human "beef" as a source of power. In many classes of work, however, such arrangements are either useless or too slow to be of real economy to the user. In the handling of loose materials, such as sand, gravel, ashes and ores, gravity is made use of wherever possible with evident economy. Where continuous operations are to be carried out it is customary to employ bunkers and to load by gravity. In loading sand, gravel and ores, from native beds, steam shovels frequently are useful. The unloading operation of course can be carried out by gravity by means of dumping bodies.

Very many styles of dumping arrangement are available from the experience of wagon builders. The recent shows afforded several good examples of this sort of construction, no less than four different styles being shown in the New York show alone. In one the body was arranged to tilt over the rear end of the chassis, being raised by a winch and suitable linkage. In another the body was slid backward on rollers by means of a hand winch, overbalancing after it reached a certain point. A third arrangement provided an inclined plane runway on the chassis, which served to elevate the front end of the body as it was forced to the rear by a winch and tackle arrangement. The fourth arrangement consisted of means for elevating the front end of the body to the proper dumping angle without displacing it on the chassis in any way. For certain classes of material, of course the bunker style of

body, with inclined floor and permanent chute, may be used, such an arrangement being particularly useful for making local deliveries of coal. In general it is noteworthy that the style of dumping arrangement used should fit the character of the material to be handled and the nature of the deliveries.

In some cases where the factor of loading time naturally is high in proportion to the normal running time of the vehicle, it is possible to bring about great economy through the use of interchangeable bodies. Sometimes the same plan can be used where the load can be dumped, as, for example, in the handling of loose material from a temporary shipping point like a sand hole, where the amount of freight to be handled is insufficient to warrant the construction of bunkers and elevators or even of mechanical shovels. In the handling of lumber, which requires considerable loading time, but can be slid off the chassis in a few seconds, this plan also is available.

Various designs of interchangeable body already have been worked out, one of the most ingenious—and, incidentally, another of the interesting developments of the recent show season—being a system involving the use of a special platform with stalls and guide rails for the chassis. The platform is built with bearing rails mounted to support the body by its overhang and of sufficient height to hold it just a little above the chassis. The truck, being backed into one of the stalls, is run out again after the body has been uncoupled, leaving the latter on the guide rails and backed into the next stall, where it runs under a loaded body, which can be dragged off the supporting rails by the power of the truck, when the couplings have been properly adjusted. The guide rails are so placed that as it leaves the supporting members the body will be brought into its proper position on the chassis.

An improvement on this system, which recently has been patented by the same inventor, provides means for elevating the outer ends of the bearing rails by which the body is supported on the stall, so that it may be slid backward into a stationary track. Loading platforms of this type may be made portable in form, and the system is so contrived that the shifting of the bodies may be accomplished by the truck driver unaided in a couple of minutes.

Obviously these and other conceivable arrangements not directly appertaining to the truck mechanism are none the less vital to the success of the vehicle in service. They represent extra mechanical equipment, the design of which is a proper consideration to be taken into account in installing the vehicle equipment and the construction of which should be undertaken by the manufacturer himself, since it has such an important bearing upon the success of the equipment as an investment.

For it is as an investment that the user is bound to consider his motor truck system. Its useful mileage represents legitimate income from the investment—the only income it is possible to obtain, properly speaking. In other words, when the motor truck is idle, either through disability or disuse, it represents a continuous outlay: interest on first cost, depreciation, insurance, upkeep, garaging and crew's wage items—all in proportionate amounts—are being expended without return. It matters not what the cause of idleness may be, it is as much a burden in its way as an idle factory or a dividendless stock.

In order to succeed in placing a great number of vehicles and in making them "pay" the commercial vehicle manufacturer and distributor are bound to take cognizance of this principle and to work with the idea of increasing the efficiency of the equipment as a whole, rather than to concentrate on an attempt to increase the road efficiency of the vehicles alone. That is only a part of the problem.

A recent instance illustrates the point. In a certain installation of commercial vehicles close check was kept on the loading and running times during a stated interval and an average obtained. The average showed that under normal conditions 15 minutes was required for loading, 15 minutes for unloading and 12 minutes for actual running over the two-mile route. In other words, for every 12 minutes of useful work the truck stood idle 30 minutes. That means for every eight hours running on the road the truck was standing idle exactly 20 hours. And yet with suitable appliances many classes of load may be picked up or dropped in two or three minutes at the outside. It needs very little arithmetical ability to figure out how the efficiency of such an equipment could be improved by devoting some attention to the load-handling problem. All of which points to the truth of the axiom already quoted:

"That the efficiency of a transportation system is limited not by its carrying capacity but by its terminal facilities."

Ignition that Caused Loss of Power.

In a car which was fitted with a double set of spark plugs set into valve caps on opposite sides of the engine, in a manner common to a great many makes of cars, it was practically impossible to get the engine to run properly on the battery. A thorough examination of the ignition apparatus, including the eight plugs, failed to show anything out of order; the gaps of the plugs on the battery side were slightly larger than those on the magneto side, as they should be, and apparently there was no reason for the erratic running. Perhaps improper running would be the better term, for while each cylinder was fired at its appointed time, a falling off in power was evident when the battery was used.

An examination of the caps in which the plugs were screwed disclosed the fact that while the inside of the caps carrying the magneto plugs was so shaped as to leave a large space around the ends of the plugs, the other caps were made with perfectly straight holes through them of just sufficient size to accommodate the plugs. Thus when the engine was running on the magneto, the mixture was more easily and thoroughly ignited, owing to the comparatively large space around the spark points. When running on the battery a smaller quantity of the mixture came in contact with the battery plugs, the result being that the charge was more slowly ignited and a corresponding drop in power was occasioned. Often the failure of the engine to "start on the switch" may be traced to the same cause. A temporary change of the magneto wires to the battery plugs will assist in making a diagnosis.

Heat that Removes Tire Patches.

One of the greatest troubles in repairing tubes is to get the patch to adhere, but also at times it is necessary to remove these patches, and, if the repairing operation has been successful the removal is often a matter of extreme difficulty. The use of hot irons is recommended for the removal of any patches which have been stuck down by a rubber solution and not by vulcanization. With the use of an ordinary domestic flatiron which has been immersed in boiling water for a few minutes, the correct heat is obtained and there is no fear of burning or damaging the principal part. However, if this method is not at hand, a clean hammer, heated on the cylinder head or the exhaust pipe, will serve the purpose very well. In either case, with the flatiron or the hammer, hold it closely up to the patch, or, if the heat is not too great, put it upon the whole length of the patch. When the whole surface is heated the patch may be peeled off without the use of naphtha or other rubber solvents.

When Water May Crack Cylinders.

In refilling the radiator of a car that has been running for some time it is well to take some care, otherwise the machine may be put out of commission. If the water is so low that the tops of the cylinders are uncovered, the effect of pouring cold water on the heated motor may have serious results, and there is a danger of cracking the cylinders at the exposed surface. It is best always to wait until the engine has cooled, should the supply be low, so that the contraction due to the rapid cooling effect of the water will not work disaster.

Porto Rico as an Automobile Market.

There are now 300 automobiles in Porto Rico, and, according to a special agent of the state department, the demand exceeds the supply.

MOTOR CAR MOVES A LOCOMOTIVE

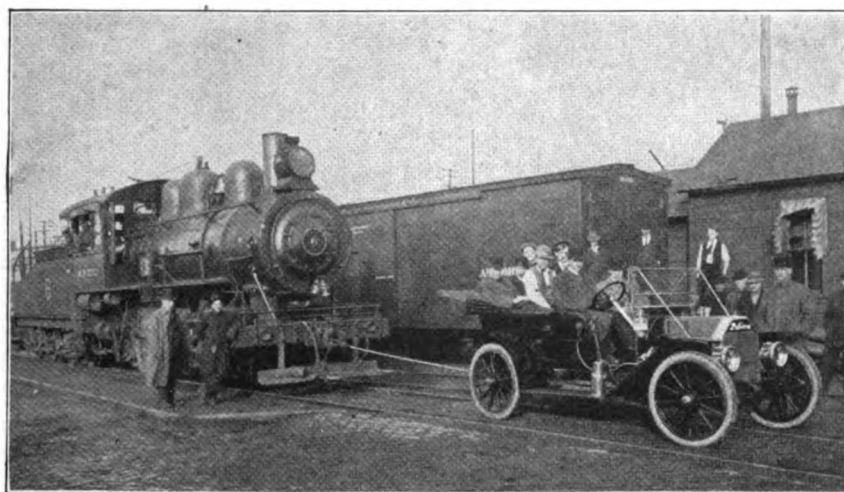
Whereat an Automobile Dealer Collects Some "Railroad Money"—Dispute that Led to Test in Oregon.

Though automobiles and locomotives seldom are joined, except in conversation, an actual coupling took place recently in Portland, Ore., and the connecting link was a hemp hawser. Growing out of a wager between Ed. Suiter, agent for Moline cars in that city, and a local freight agent, the demonstration proved the superiority of deeds over words and incidentally the

rowed a larger wrench. His struggles apparently were ludicrous to the chauffeur, who, with a grin like a Cheshire cat, was looking on, and after a last terrific tug at the offending member he turned around in high dudgeon and demanded of the chauffeur what it was that so excited him to risibility.

"Ever stop to think," responded the chauffeur, "that some o' them caps have left hand threads?"

"Yes, I have thought of that," replied the Owner, shedding a little of his indignation, "but I know this one has a right hand thread because I just had its mate off and it stands to reason that the builders are not foolish enough to put different



SHOWING A MOLINE TOWING A "MOGUL"

value of the automobile as a tractor. Having "kicked" at the delay incident to the delivery of carload shipments of Moline cars, Suiter ventured to remark that if the automobiles had been hitched before the locomotives deliveries would have been made on time. Whereupon the freight agent offered to bet that a Moline could not even move a locomotive and backed up his offer with real money, which promptly was "covered." After a long cable had been procured a 50 ton locomotive was drawn up for the test and hitched to the rear axle of the automobile. Judging by the relative size and weight of the two exponents of modern travel, and by the power apparent, those who were on hand to witness the trial expected that the automobile would fail. But as soon as the rope was drawn taut the monster of steel commenced to move, slowly at first, but with gradually accelerated speed the Moline walked away with its complement of seven passengers and the mammoth "tow" of 50 tons.

The Owner and the Hub Cap.

The new owner was having trouble removing one of his hub caps. After numerous ineffectual attempts to loosen it with the tools at hand he gave it up and bor-

threads on two hub caps on the same side of the car."

"Well, maybe they're foolish and maybe they're not," retorted the chauffeur, as he slid back the door preparatory to making his departure, "but I have known a couple of just such cases and if I was you I'd be willing to try it anyway."

In the end the Owner did try it and to his surprise found that his interlocutor was right. Thereafter when he essayed an adjustment he was seen to look around the garage in search of someone who wore a grin.

Gasolene Exhaust Claims Another Victim.

Another death by inhalation of the gasolene exhaust, caused by running the motor within the small confines of a private garage, with door and windows closed, was recorded last week in Massachusetts. William Winrow, 41 years old, of 134 Willow avenue, Somerville, tried to repair some slight damage to his machine, and crawled under the car after starting the motor. The escaping fumes being confined in the garage rendered him unconscious and finally killed him. When he was found several hours later he had been dead for some time from poisoning by carbon monoxide, one of the gases contained in the exhaust.

VIBRATION LIKE HEAT TREATMENT

It Transforms Molecules and Makes Steel Brittle, Says National Engineer—High Speed a Contributing Factor.

While the principle that tires grow warm and even hot under the severe stress of high speed, owing to the molecular friction caused by repeated flexure, is familiar enough, it remained for W. G. Wall, engineer of the National Motor Vehicle Co., to liken the vibration which all parts of the car must undergo to a species of "heat treatment." "It is not the big jolts that break the car to pieces," he suggests. "The bumps on the roads which toss the occupants almost out of the car are not half as injurious to the mechanism as the owner frequently thinks. Most breakage is the result of vibration, which crystallizes the metal and makes it brittle.

"Excessive speed produces more vibration than anything else, and unless a car is designed with a view to speeding, it is rapidly torn to pieces in the hands of the owner," he continues. "It is estimated that there is many times, possibly 100 times, the amount of vibration at 90 miles an hour than there is at a speed of 40 miles an hour. One hundred miles of racing at terrific speed probably equals hundreds of miles of ordinary travel in a motor car.

"The results of vibration are analogous to those of heat improperly applied. Vibration increases out of all proportion to the increase in speed of the car. As the vibration increases crystallization occurs.

"Crystallization is the transformation of molecules in the substance, so that its form which is to all appearances, fibrous, becomes a coarse or crystalline structure. This means of course that the material is brittle and much more liable to break.

"Steering knuckles, axles, frames, springs, every part of the car, is put through an ordeal in the bigger racing events which may almost literally be called the fire test. In addition to this creation of heat or vibration there is a terrific strain in taking the turns at high speed. When the racing car sweeps into a curve every part of the machine is wrenched and twisted viciously.

"The wear increases out of all proportion to the speed and perfect lubrication is an absolute necessity. Oil must be fed to every bearing swiftly and without faltering or that bearing will burn or stick. In ordinary usage a defective oil system would result in wear, but it may develop slowly, while in racing lack of oil would mean a tell-tale disaster in very short order.

"They say the way to fight fire is with fire. Perhaps that is the theory the people worked upon who found that the way to prepare steel to stand vibration was to give

the steel certain heat treatment before used. This heat treatment is a very accurate process and simply toughens the metal and eliminates the possibility of crystallization to a great degree."

"Flipping" Meter a New Taxicab Trick.

"Flipping the meter" to "make the 'clock' go faster" is the newest stunt of the taxicab driver that has been brought to light. It was discovered by chance by the chief of the bureau of licenses of New York City, F. V. S. Oliver, while riding in a taxicab recently, and he estimates has cost travelers a goodly sum of money, although one which the taxicab companies concerned have given their most solemn oaths that such a gentle art was unknown to them.

Chief Oliver made his discovery when he rode in a taxicab from Times square to a point near to the Grand Central station. Here he noticed that the meter, or "clock," as chauffeurs term it, registered \$1.10, although the distance was less than half a mile; however he said nothing and left the cab for a minute. When Oliver jumped into the cab again, he noticed that the chauffeur gave the flag over the meter a dexterous little shake, which sent the fee up to \$2 before even the wheels turned. The destination was in the same block where the second start was made, but the "clock" was so well "flipped" and hard pushed that it registered \$6.40 when it arrived there, although the whole trip distance was not one-half mile and the stop but momentary. The charge, however, was not paid. Instead the official card of the chief inspector was tendered to the chauffeur, who was struck almost speechless. As Mr. Oliver was very anxious to learn something definite about "flipping the meter," the chauffeur, under a promise that he would not be prosecuted, disclosed the scheme, which merely consisted of "wagging" the flag in a particular manner.

The next day the taxicab and meter companies received letters which brought answers to the office of the license bureau faster than ever the meters worked. They promised to have the meters changed at once so that "flipping" should become a lost science. There were but two companies who used meters capable of being "flipped," one owning 300 and the other only about 25 cabs. The trouble has been corrected on all of them, and "fleecing" in this manner undoubtedly has been stopped.

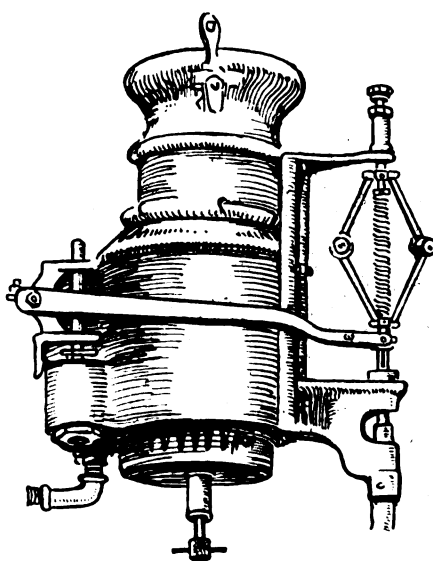
How Railroad Uses an Automobile.

Not only for the reason that it will perform good service for the railroad but also because it will be a good advertisement for their most famous train, has a Chalmers "30" been purchased by the Lehigh Valley railroad. The car is to be finished in the same colors as the Black Diamond express, and it will be driven between Geneva, N. Y., and Sayre, Pa., by the agricultural department of the railroad.

REGULATES MIXTURE TWO WAYS

New Bowers Carburetter Has Suction and Mechanical Air Valves—Compensates for Speed and Load Requirements.

So subtle and variable is the relation of the components of the mixture that carburetter designers sometimes are almost in despair of ever securing an arrangement that will yield a gas of suitable proportions under all running conditions. Both mechanical and automatic arrangements have been tried with varying degrees of success, but an exceedingly novel combination is that of a new type of Bowers carburetter,



BOWERS AUTOMATIC CARBURETTER

which the Gilbert Manufacturing Co., New Haven, Conn., lately has brought out. Securing some of the useful properties of both arrangements, the designer of the device in question has produced a mixing arrangement that is unique in that it is actuated both mechanically and automatically. Strictly speaking, in fact, the arrangement is entirely automatic, since the mechanical regulation is accomplished with the aid of a speed governor. The distinction is necessary, however, as a portion of the air is handled by means of a butterfly valve of standard pattern.

The theoretical point involved is that with a spring-controlled air valve of the ordinary type, the mixture is responsive only to changes in pressure, or suction, as it more commonly is considered, which, in turn, is regulated to some extent by throttle position. Hence when running at medium or high speeds under light load, as when on a down grade, a weak mixture may be developed, owing to the throttling effect, the difficulty frequently being difficult to eradicate owing to the delicacy of spring adjustment. Also when the throttle is suddenly opened the spring air-valve

may require some time to adjust itself to conditions. With the type of air regulator that is governed directly by the speed of the engine, on the other hand, the quantity of air admitted to the mixing chamber always is proportional to the speed, regardless of the amount of throttle opening. Another peculiarity of the engine governed automatic arrangement, as it may be described, is that the increase in air-flow, as the speed increases, is always proportional to the accelerative power of the engine. Hence the mixture always "follows" the engine, so to speak, instead of anticipating it, as it may be expected to do where the extra air admission is governed by the suction alone.

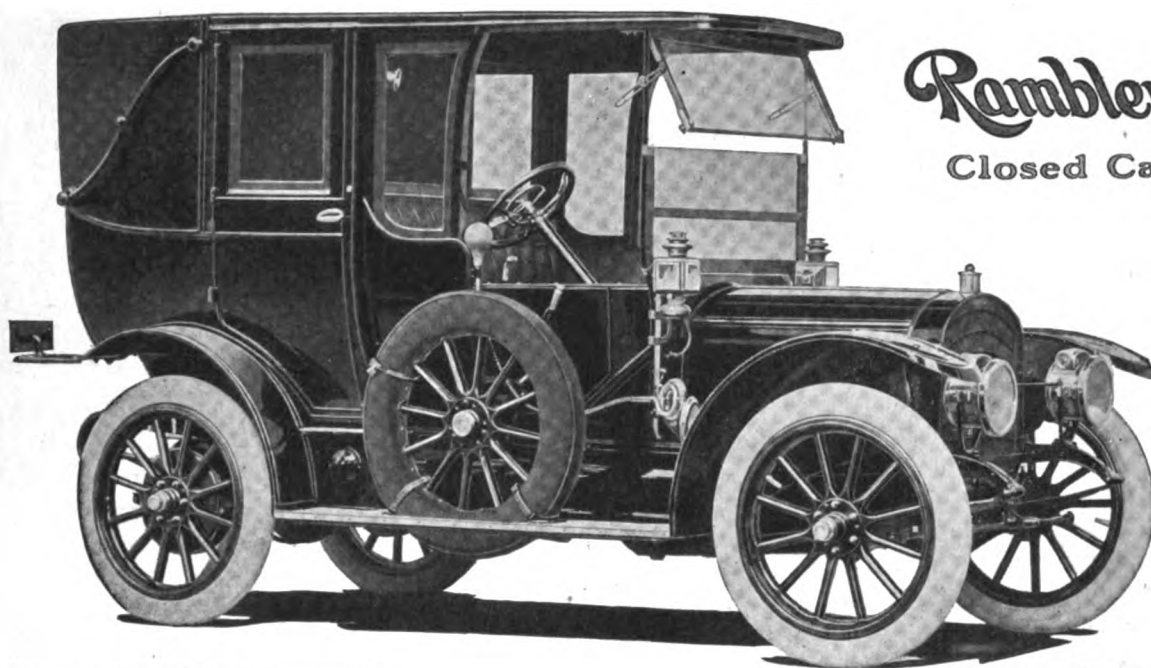
In the new Bowers system, which the accompanying illustration depicts, two supplementary air inlets are provided, which are placed side by side and deliver air to the mixing chamber much in the same way as is done in the standard Bowers instrument. One of the valves is spring controlled and hence responds only to suction. The other is actuated by a swinging arm, which is moved by a light fly-ball governor driven by a flexible shaft from the engine. The results secured by combining the two styles of automatic regulation are thought fully to justify the addition of the necessary mechanical connection.

Cranking that Disabled Two Brothers.

Two birds often have been killed with one stone, but it is seldom that two men are disabled by the crank of a motor car in double-quick time. An accident of this nature, however, recently was suffered by two brothers, Charles E. and John C. Tribbey, of Washington, D. C. They own an automobile which they use in common. While Charles was trying to crank the machine the handle slipped, the motor kicked back and the crank struck him with such force as to break both bones of his forearm. Thereupon John, while his brother was groaning with pain, took his turn at the crank in the hope of conveying Charles to a doctor, but he, too, let the crank handle slip and it broke his arm in the same way as it had broken his brother's.

Testers Charged with Destroying a Road.

Affidavits have been filed in Newcastle, Ind., in the circuit court by the county commissioners against the United States Motor Newcastle Co. and Lon Gephart, head tester, charging that a two-mile section of the Lewisville pike south of the city was destroyed by them when they allowed 25 automobile testers to use it all day on January 28, leaving it in a badly cut-up condition. Suit was brought against the company to recover the cost of the road, which, it is said, formerly was the best piece of public highway in Henry county, but it never came to trial, because the company agreed to repair it, admitting that their testers had caused the damage.



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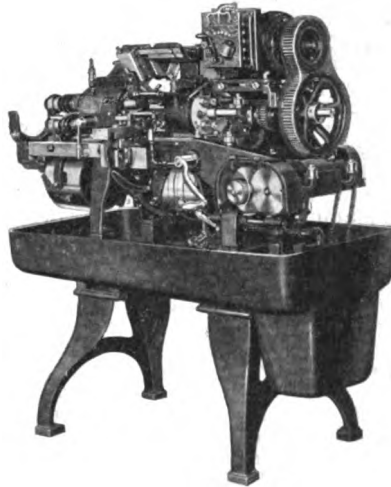
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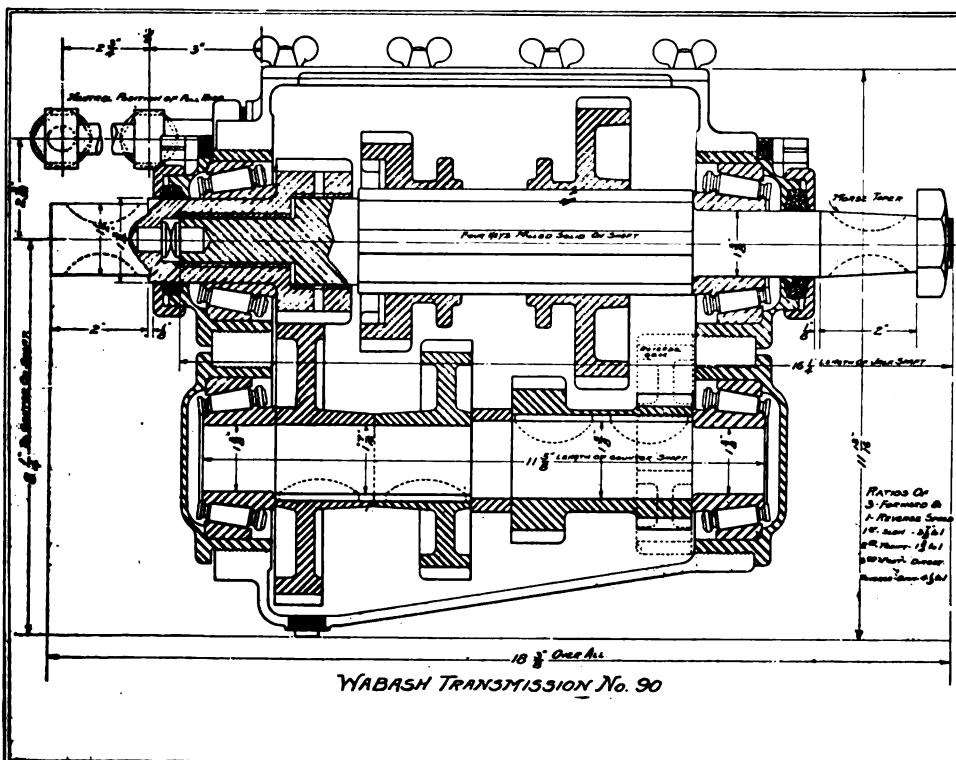
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RECENT PATENTS.

947,778. Automobile Driving Gear. Charles C. Bettenhausen, Princeton, Neb. Filed July 25, 1910. Serial No. 573,746.

1. A rotary axle, which is driven by differential gearing, and is provided with terminal beveled gear wheels; a sleeve thereon, which carries at each end an upwardly extending bracket and a closed casing for one of said terminal beveled gear wheels; a pair of traction wheels, having rotatory stub axles, which are fastened to the hubs of said traction wheels, and are provided with bevel gears; a nonrotary sleeve which rides between the hub and stub axle of each traction wheel, and carries a downwardly extending bracket and a closed casing for one of said bevel gears; and a vertical pivot pin, which passes through both of said brackets and both of said casings; in combination with a gear sleeve, which pivots said gear casings together, rotates on said pivot pin, and is provided with terminal gears, meshing with said beveled gear wheels and bevel gears.

974,796. Vehicle Wheel Rim. Stephen A. Huntley, Kansas City, Mo., assignor, by direct and mesne assignments, of one-third to George W. Slater and one-third to Joseph M. Benham, Oakland, Cal., and one-third to W. T. Otis, Jr., Reno, Nev. Filed April 28, 1909. Serial No. 492,757.

A wheel rim comprising a main section and an auxiliary section, the main section being provided with alternating wedging portions and recesses; the auxiliary section being provided with similar wedging portions and recesses adapted for complementary interlocking engagement with the corresponding portions of the main section, said auxiliary section having a plurality of lugs projecting therefrom, and a lever pivoted to each lug and having its free end bifurcated, said bifurcated end being designed to engage opposite sides of the spokes of the wheel to prevent displacement of the sections.

974,809. Explosive Engine. Hans Clarin Hovind Mustad, Duclair, France. Filed Oct. 20, 1909. Serial No. 523,629.

1. An explosion engine comprising a casing having an explosion chamber and inlet and outlet ports in the walls of the chamber, a piston in the casing, a slide interposed directly between the piston and casing to control one of said ports, a second slide also interposed directly between the piston and casing to control the other

port, and said second slide being angularly displaced with respect to the first slide, and means to operate said slides.

974,824. Spark Plug. Elmer C. Rauch, Coeur d'Alene, Idaho. Filed Aug. 25, 1909. Serial No. 514,622.

1. A spark plug of the make and break type, comprising a body portion adapted to enter an ignition chamber and there constituting one terminal of the plug, said body portion having a longitudinal passage therethrough enlarged at the end remote from the ignition chamber, and an electromagnet mounted on the body portion of the plug, a core for the magnet provided with a longitudinal passage enlarged at the outer end and there screw threaded, a firing pin extending through the body portion of the plug into the hollow core and there formed with an enlarged end housed in the enlarged portion of the passage through the core, said firing pin carrying within the enlarged portion of the passage the body of the plug an armature in operative relation to the core and at the end remote from the end within the core extending beyond the ignition chamber end of the body portion of the plug and there bent at an angle to constitute a terminal of the plug in operative relation to the terminal at the ignition chamber end of the body portion of the plug, a closure for the enlarged end of the core provided with screw threads adapted to the threaded end of the passage through the core, and a spring housed in the core and compressed between the closure and the enlarged end of the firing pin, said spring tending to maintain the firing pin in open circuit position.

974,853. Internal Combustion Engine. Herman F. Bock, Antioch, Ill., assignor of one-half to Frank W. Severin, Chicago, Ill. Filed Dec. 20, 1909. Serial No. 534,181.

1. An internal combustion engine including a combustion and expansion chamber, means for separating said chamber into distinct compartments when compression occurs and for re-establishing communication between said compartments when compression has been effected to permit of forcible flow from the compression compartment to the companion compartment, a piston moving in one of said compartments and serving therein to effect compression while the two compartments are separated, and means for supplying fuel to the other compartment.

974,877. Wagon. Howard Greene, Cranford, N. J., assignor of one-third to Walter F. Blaisdell, Brooklyn, N. Y., and one-third

to John H. Kennard, New York, N. Y. Filed May 20, 1909. Serial No. 496,912.

1. A truck platform, a frame, means for adjustably securing the frame to the platform, and including angle iron and screws, a plate above the frame, and a universal joint between the plate and the frame.

974,930. Electric Light Attachment for Gas Lamps. Jason C. Stearns, Worcester, Mass. Filed Jan. 31, 1910. Serial No. 541,059.

1. As an article of manufacture an acetylene gas burner, having a reflector behind the burner, a parabolic reflector located above said burner, and an incandescent electric lamp located within the parabolic reflector.

974,972. Starting Mechanism for Explosion Engines. Merrill B. Rice, Los Angeles, Cal., assignor of one-half to M. Grodin, Oakland, Cal. Filed Feb. 23, 1909. Serial No. 479,636.

1. In a starting mechanism for explosion engines, a valve casing, an oscillating valve in said casing, and a rotary valve in the oscillating valve, co-operating with the latter, to deliver timed discharges of compressed air to the engine cylinders, as set forth.

974,992. Manifold for Internal Combustion Engines. Merrill B. Rice, Los Angeles, Cal. Filed March 26, 1910. Serial No. 551,786.

1. A manifold comprising an inlet portion, an elongated head provided with a plurality of outlets distributed along its length, and having an elongated inlet slot, and a distributing portion extending directly upward from the inlet portion to said elongated slot.

975,056. Spark Plug. William H. McNutt, New York, N. Y. Filed Aug. 4, 1910. Serial No. 575,508.

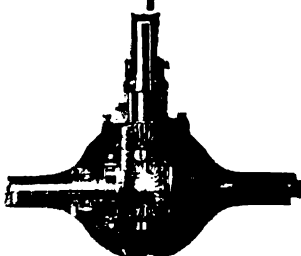
1. A spark plug provided with a protruding electrode or pole piece, a foraminous metal cap inclosing said pole piece and having one orifice registering with the end thereof and forming the opposing electrode, the size of said pole piece being so proportioned to that of said orifice, that when the electrodes are operatively positioned the passage therebetween is of less than flame-passing magnitude, and all the other orifices of said foraminous cap being also of less than flame-passing magnitude.

975,128. Automobile Hood. John P.

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Gordon, Columbus, Ohio. Filed May 2, 1910. Serial No. 558,883.

1. A waterproof hood for automobile tops comprising a broad central strip, a narrow strip joined longitudinally to the edge thereof, a terminal strip similarly joined to the margin of the narrow strip, an apron strip similarly joined to the remaining margin of the central strip, smaller pieces at the respective extremities of the central strip and the narrow strip adapted to co-operate with the other strips and form a box-like inclosure when the cover is in a closed position, an elastic band in the terminal strip adapted to preserve a smooth external casing, means for securing the apron strip against the back of the seat, means for enwrapping the bows of the vehicle top and securing the cover in position.

975,198. Variable Speed Apparatus. William B. Allyn, Whitesboro, N. Y. Filed Aug. 26, 1909. Serial No. 514,826.

1. In a variable speed apparatus, an oscillating rotative pumping device comprising a driving element, a driven element, a valve chamber consisting of a structure which is suitably connected with the casing of said pumping device, having a bearing on a rotatable and slidably mounted sleeve, ports for the passage of liquid to and from said valve chamber and pump, means for filling said valve chamber and pump casing with a liquid, and suitable stuffing boxes to prevent undue leakage of liquid, substantially as described.

975,249. Shock Absorber. William A. Johnson, Chicago, Ill. Filed June 8, 1910. Serial No. 565,789.

1. A shock absorber comprising a cylinder, a piston therein provided with a passage therethrough for fluid communication from one side to the other of the piston, a valve controlling said passage bodily movable in either direction with the portion of the passage which it controls, and also relatively movable in either direction to close said passage when at either extreme of said relative movement, and a stationary guide for said valve constantly engaged therewith frictionally to oppose its movement with the piston in either direction and thereby to occasion said relative movements of the valve to close the passage.

975,267. Runner for Automobiles. Thomas Milldown, Red Lodge, Mont. Filed April 20, 1910. Serial No. 556,609.

1. In an apparatus of the character described, a pair of runners mounted on the axle of an automobile, a toothed wheel mounted on each end of said axle and extending vertically through each of said runners and having a yielding support thereon, a crank shaft mechanism operatively connected with said yielding support, and means for locking said crank shaft mechanism.

975,276. Shaft Driven Axle for Automobile Vehicles. Francois Pilain, Lyon, France. Filed Jan. 15, 1907. Serial No. 352,455.

1. In a motor vehicle, the combination of a spring supported body, an axle having a hollow axle end, a wheel journaled upon the hollow axle end, driving mechanism supported by the body, and an intermediate shaft interposed between the driving mechanism and the wheel and extended through the hollow axle end and having universal joint connections at its ends with

the driving mechanism and the outer end of the wheel hub respectively.

975,290. Driving Gear for Automobiles. John A. Scharf, Richwood, Ohio. Filed June 23, 1909. Serial No. 503,827.

1. A driving gear for automobiles comprising a driving shaft mounted upon the body of the automobile; two friction driving disks fixedly mounted thereon in separated relation; two short shafts extended from between the said disks to the sides of the body of the automobile; a bearing for each of the said shafts mounted on the body of the automobile and pivoted to swing the said shafts in a horizontal plane; a swinging bearing for each of the said short shafts to support the inner ends thereof; a plurality of friction wheels one fixedly mounted on each of the said short shafts and disposed between the faces of the said driving disks and having a peripheral surface adapted to successively engage the faces of the said driving disks; a plurality of transmission gears one mounted on the outer end of each of said short shafts; a plurality of transmission gears one fixedly attached to each of the driving wheels of the automobile; a flexible connection between the said transmission gears; manually operated means connected with the inner ends of said short shafts to swing the same in directions opposite and substantially parallel to said driving shaft to cause each of the said wheels carried thereby to impinge upon one of the said friction driving disks; a plurality of levers pivotally mounted on the body of the automobile and engaged with the friction wheels to move the same longitudinally on the said short shafts; a rocking lever having arms extended oppositely from the pivot thereof, each of said arms being connected with the free end of one of said levers; a pivot plate supporting and pivotally connected with the said rocking lever, said plate being pivotally mounted upon the automobile frame; means for manually operating the said rocking lever to cause the said friction wheels to move toward and away from the center of said driving disks; and means embodying the steering gear for moving the said pivot plate on its pivot center to laterally shift the free ends of said levers.

975,343. Automobile Radiator. Jacob Fleischman, Jersey City, N. J., assignor of one-half to Isidore Fleischman, Jersey City, N. J. Filed Dec. 17, 1909. Serial No. 533,549.

1. A radiator of the class described, composed of a plurality of sheet metal tubular units each having expanded hexagonal ends with an intervening portion of elliptical form, said central portions being separated by a web portion of two thicknesses of the metal, the said ends of the units being nested together and securely united, the said control portions of said members forming undulating or tortuous curved passages from top to bottom, such passages being closed at each side by the united expanded portions of said units, the union at the points at which the web portions are united with adjacent parts consisting of four thicknesses of metal.

976,159. Electrically Operated Signaling Horn. Egmont Max Tormin, Newton, Mass., assignor to Holtzer-Cabot Electric Company, Brookline, Mass., a Corporation of Massachusetts. Filed July 6, 1909. Serial No. 506,085.

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horn comprising in combination a horn, a casing secured to the inner end thereof, a diaphragm interposed between said horn and casing, an electromagnet having a hollow core, a plunger arranged within said core and having a hollow one end normally adjacent to, but not in contact with said diaphragm, a resilient supporting member secured to the other end of said plunger, a circuit including the coil of said electromagnet, and means whereby said circuit may be automatically opened and closed.

976,187. Device for Coupling Two Transmission Shafts. Arthur Constantin Krebs, Paris, France, assignor to Societe Anonyme des Anciens Etablissements Panhard et Levassor, Paris, France. Filed Dec. 7, 1909. Serial No. 531,903.

Power transmitting means, comprising the combination of a driving shaft and a driven shaft arranged in substantial alignment with each other, the ends of each shaft being provided with a plain, circular flange, and a non-metallic, flexible, circular diaphragm of equal diameter with said flanges, placed between the latter, and rivets securing said diaphragm alternately to one and the other of said flanges, so that it assumes an unabated form.

976,193. Motor Vehicle. Vincent Link, Detroit, Mich. Filed Feb. 12, 1910. Serial No. 543,526.

1. In an automobile, a chassis, a motor at the forward end thereof, a differential jack shaft near the rear end thereof, change speed gearing driving the differential, a transmission shaft coupled by universal joints to the gearing and motor shaft, a fly wheel on the motor adjacent the transmission shaft provided with side intake rim delivery fan blades, a radiator on the

chassis above and to the rear of the fly wheel, and a casing adapted to direct the blast from the fan blades through the radiator.

976,226. Hydraulic Transmission for Automobiles. Benjamin H. Stevenson, Hamler, Ohio. Filed Sept. 27, 1909. Serial No. 519,677.

1. In an automobile power transmission, a reversing valve, comprising a casing having a septum thereacross to divide the casing into front and rear chambers, the front chamber being provided with an inlet port and a pair of outlet ports lying on opposite sides of the inlet port, and said rear chamber being provided with an outlet port and pair of inlet ports lying on opposite sides of the outlet port, a piston valve in each chamber, and a valve stem connecting said pistons whereby the pistons may be reversed to lie on either side of the central ports of the respective chambers.

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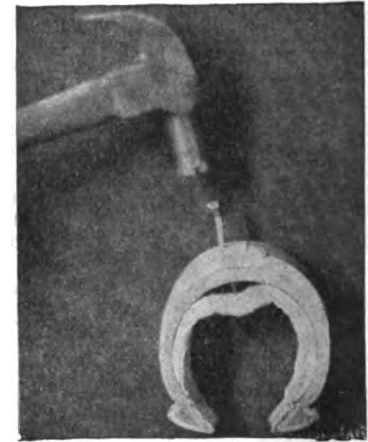
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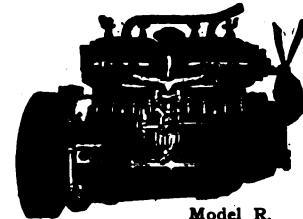
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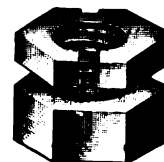


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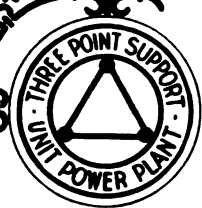
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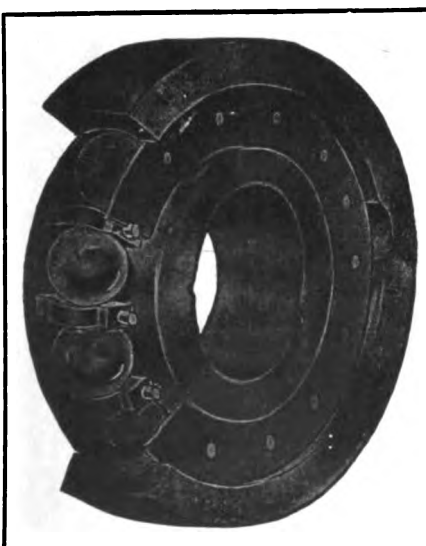
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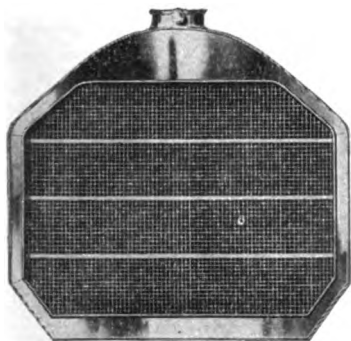
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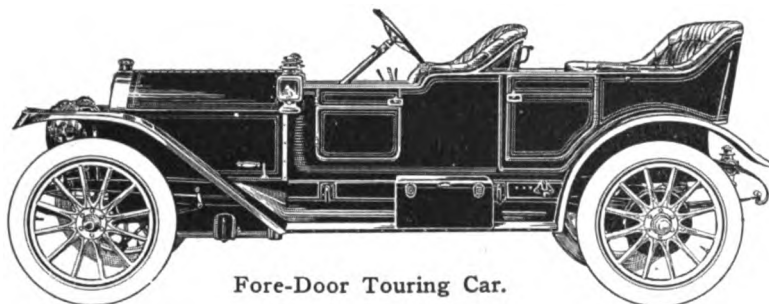
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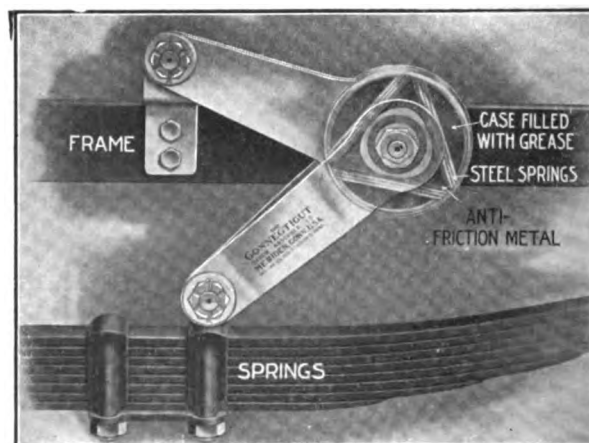
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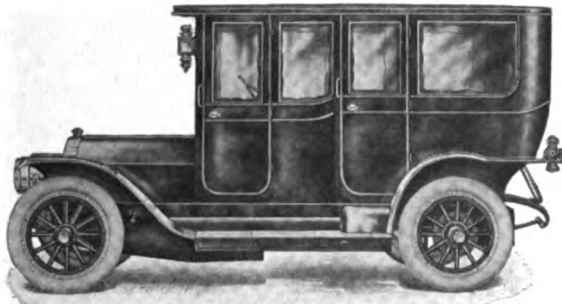
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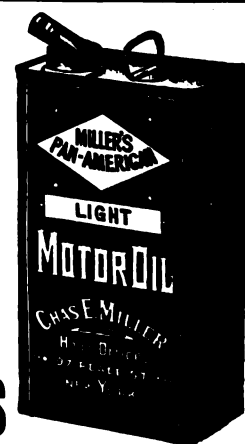
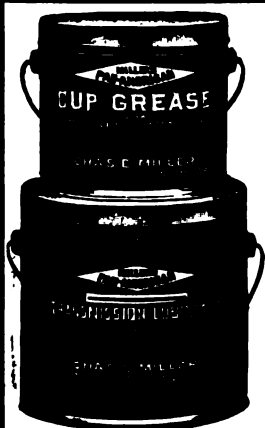
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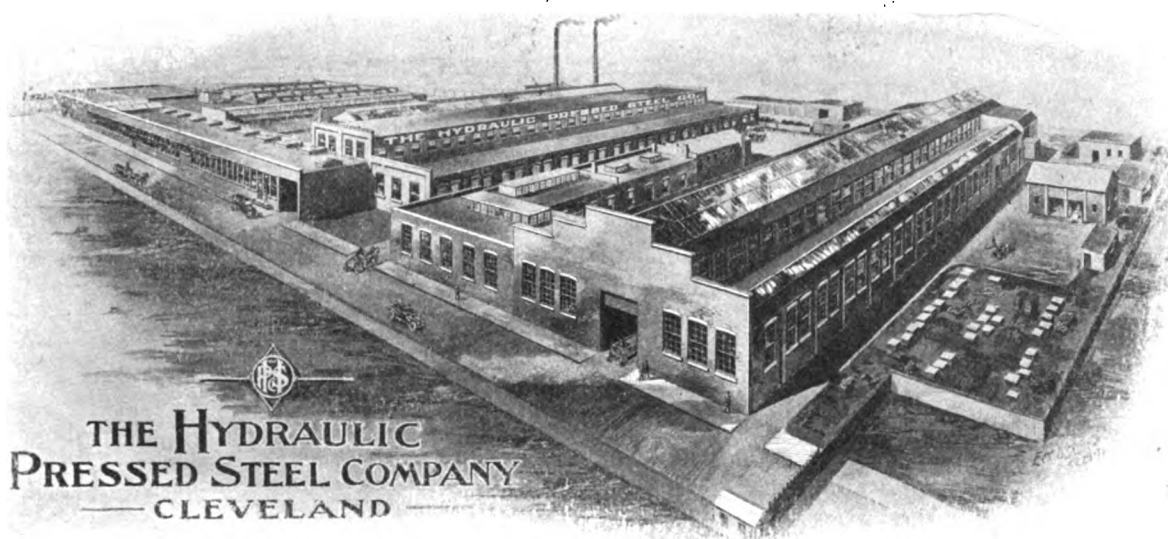
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R. B. McMULLEN,¹ Gen'l Sales Agent, Chicago, Ill.



"Arc Flame System" MAGNETO

Accurate and durable. Every part made of the finest kind of material, fashioned by skilful craftsmen and assembled under the most rigid inspection. Reliable and efficient in service.

High tension, with stationary, removable coil. No moving wire on the armature. Each spark is followed by an arc flame. This arc flame will ignite a much weaker mixture than with the spark produced by the usual coil ignition. A variation of 45 degrees is allowed on the magneto shaft, which means 45 degrees in the crank shaft for a four cylinder, four cycle motor, as the magneto runs at crank shaft speed. The retarded spark is just as efficient as the advanced spark, making it easy to start the motor with a quarter turn of the crank, with the timing lever fully retarded.

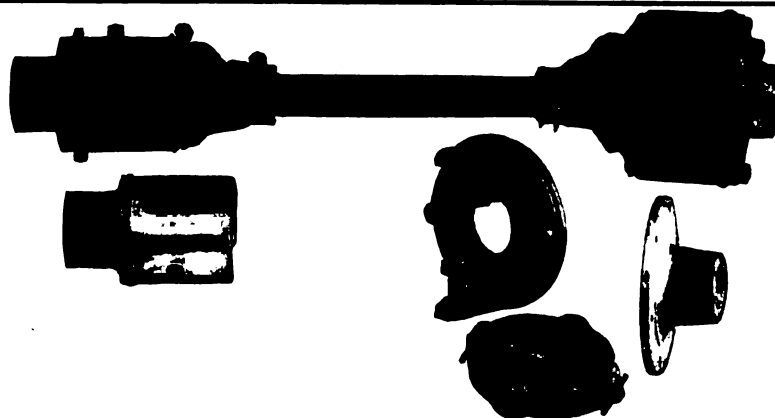
Get the catalog of the "Pittsfield Ignition System"

PITTSFIELD SPARK COIL COMPANY, Dalton, Mass.

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Type F-610



The trunion block or slotted yoke type joint takes the slip or lateral motion and the ring and pin type joint at the front end the principal angle.

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It takes more than good advertising or good salesmanship to make a car manufacturer pay out thousands of dollars more for his lamp equipment each year.

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Have him put Solars on your car, and join the great army of those who have abolished lighting troubles.

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(93)

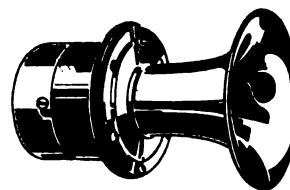
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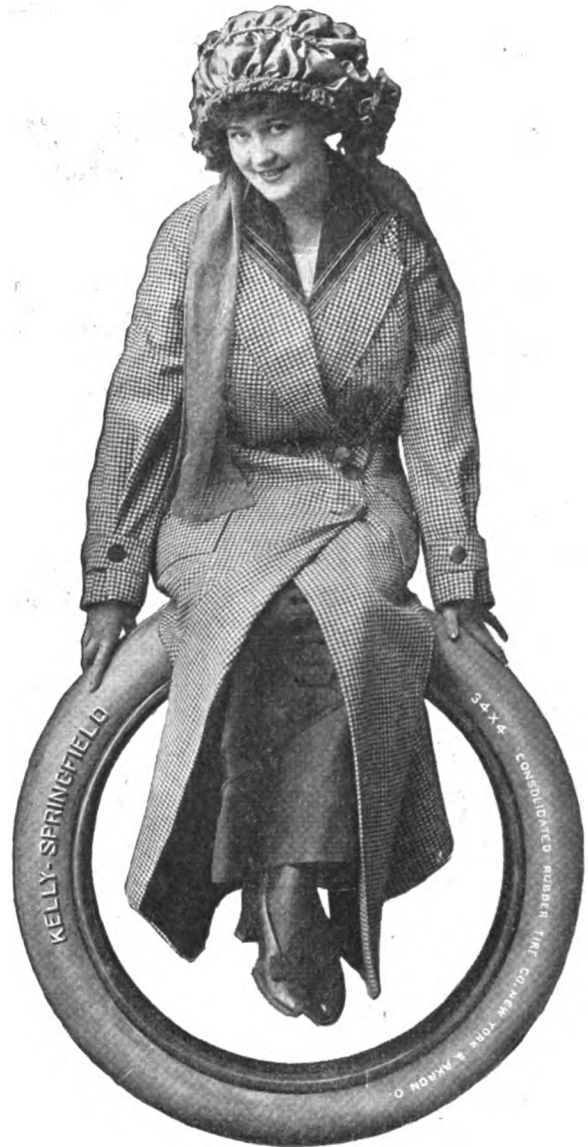
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No Cranking— No Danger

THE Simms Motor Starter is used in connection with the standard Simms Magneto.

NO high tension wiring, no high tension connections or separate coil is used.

IT starts the motor from the seat without cranking.

IT greatly increases the pleasure of motoring, eliminates the danger of broken arms, and saves both wear-and-tear on the whole car and gasoline because the motor can be stopped when the car is stopped.

Write for Illustrated Booklet L.



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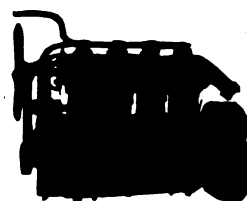
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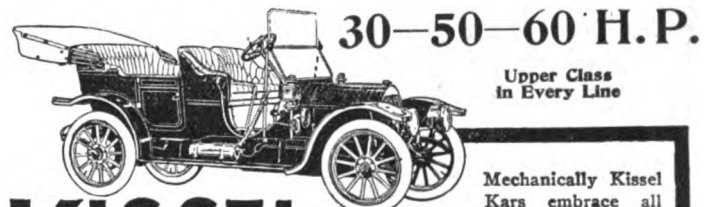
The Car of 1911 is the "Henry"

Just to say "1911 Model" does not describe any Henry. The verdict of Henry dealers this month is, "The Henry is the car of 1911." Sales are big. Territories going. Men who have grown gray buying motor cars declare it their choice—first, last and all the time.

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**EVERY
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Mechanically Kissel
Kars embrace all
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H. P., \$2500. 50 H. P. 3-Ton Truck, \$3500.
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IGNITION ABSOLUTELY SURE

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(Wassessing Station, D. L. & W. R. R.)

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Model G—2-Passenger Roadster.....	\$1,000
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Catalogue and full details of our complete line sent on
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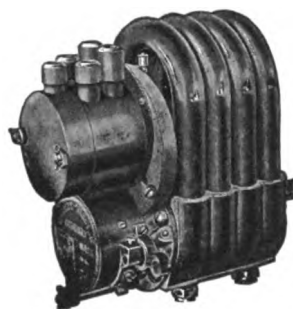
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Runabout, Baby Tonneau, Touring Car, Coupe
Greatest Automobile Value in America

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Construction—Mechanically unequalled.

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Catalogue H with full information is yours for the asking.

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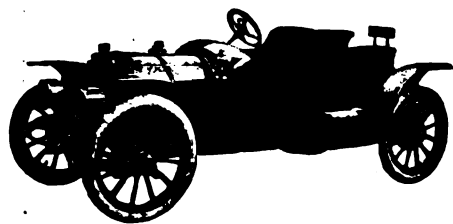
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Style, Luxury, Quality, Strength, Speed.

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You can buy

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and other makes practically as good as new which are cheaper and better than some new cars. Prices range from \$750 up. Second-hand small cars taken in exchange.

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THE STRONG POINTS—

Three Point Suspension.

Gramm Multiple Disk Clutch.

Gramm Roller Spring Suspension.

The Gramm Motor Car Co.

101 So. Lima St.

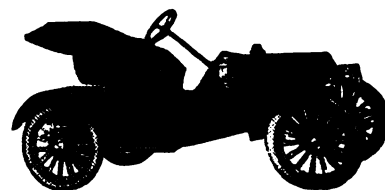
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Metz 1911 Runabout

Every car fully equipped exactly as shown

\$485



EQUIPMENT—Bosch magneto, top and slip cover, gas lamps and generator, oil lamps, horn, 28x3 standard clincher tires, and set of tools.

GOOD DEALERS WANTED IN UNOCCUPIED TERRITORY.

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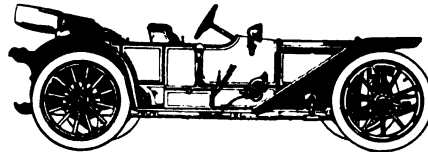
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"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading cities. Increased output this year offers a new opportunity to buyer and dealer alike.



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TRAVELER

Underlung
frame; 40 in.
wheels; 4 cyl.; 50
H. P., \$4250.

AMERICAN MOTOR CAR CO., Dept. Y, Indianapolis, Ind.
Licensed under Selden patent.



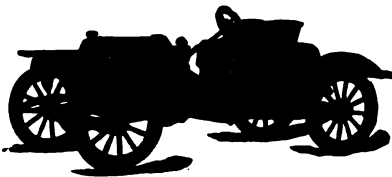
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96 in. wheel base 22½ H. P. \$800
32 in. wheels

Sliding gear transmission. Multiple disc clutch. Weight,
1200 lbs.

Runabout \$800.
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K-R-I-T Motor
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DETROIT



\$1,600 Cartercar

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H.P., 110 inch wheel base, 5 pas-
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speeds, will climb a 50% grade with
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generator, horn, mats, tools, jack,
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\$1,100. Double Rumble \$1,125.
Double Divided Rear Seat \$1,150.
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CARTERCAR CO.

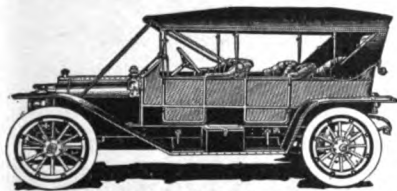
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New four and six passenger
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With complete touring equipment, from \$2250 to \$2800

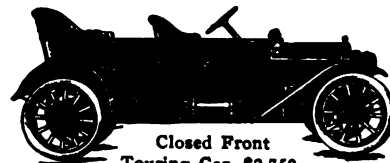
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GEO. B. SELDEN, Pres.

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"The Easiest Riding Car in The World"



Closed Front
Touring Car, \$2,750

Holds more long-distance racing records
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YOUR TERRITORY MAY BE OPEN

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"King of the Road"

THE latest addition to the "Dreadnought" Moline 1911 Models. Beautifully finished in a rich dark grey, heavy nickel-plated and black enameled trimmings. Price includes zig-zag windshield, five lamps and full kit of tools. Equipped with our famous



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4 x 6 Long Stroke Motor

with which we won Chicago Trophy in 1910 Glidden Tour and Team Trophy in 1000 mile Chicago run. Write for booklets on both runs and 1911 Catalog

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35 H. P.
112-in. Wheel Base
36-in. Wheels

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**Steering Gears
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Control Levers**

MODEL 95—UNIT TRANSMISSION
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give that kind of service which the buyer has a right to expect from chains which have been chosen because of their well-known quality; accuracy in pitch and durability being especially distinguishing features.

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THE WHITE BRASS BEARINGS SHIP & ENGINE BUILDING PHILADELPHIA, PENNA.

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Don't take
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your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

Just put on Packard Cable and forget all about your ignition troubles
NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY
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from flaws, true to drawing within 1-1000
of an inch and equal in appearance to a
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Van Wagner makes that kind.

Years of experience in compounding
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Rub a little GLASSO on
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A clear vision is as necessary as a clear head. Don't
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With ears
for attaching
mud apron.

These cuts show only two of the various
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Made from 5-32 inch steel—lighter and
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Plain
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Manufacturers of

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are now in use, hav-
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Write today for copy
1911 Catalog. Missing
means losing.

Ford Motor Company DETROIT, MICH.

MAXWELL CARS

1911 Line

Model E. A. Touring Car, 4-cylinder,	30 h. p.,	price, \$1350
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Model G. A. Roadster, 4 " 30 " "		1350
Model I Touring Car, 4 " 25 " "		950
Model Q-11 Runabout 4 " 22 " "		750
Model Q-3-11 Touring Car, 4 " 22 " "		800
Model A. B. Runabout, 2 " 16 " "		600

Maxwell-Briscoe Motor Co.

Licensed under Selden patent.

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Gasolene Storage Systems

Keep oil perfectly clean, safe and strong as when purchased.
Systems Suitable in Style, Size and Price—for your individual need.

We make the lowest priced and we make the best systems.

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S. F. BOWSER & CO., Inc., Ft. Wayne, Ind.

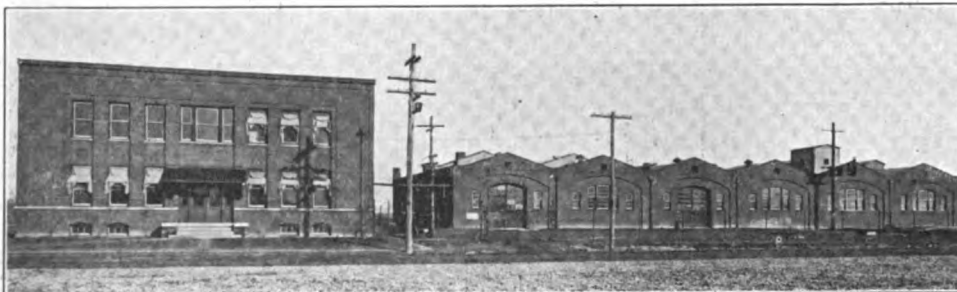
Boston, New York, Philadelphia, Chicago, San Francisco, Toronto,
St. Louis, Minneapolis, Dallas, Atlanta.

Leading automobile manufacturers
equip their cars with the

Remy Magneto

year after year. Severest tests in
the hands of thousands of owners
have established Remy supremacy.

Specify the Remy Magneto on your new
car and be assured of Satisfactory Ignition



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Pressure Castings

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including Bronze, Aluminum
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In setting an ordinary jack, the short handle necessitates your crouching under the car; and kinking the back, barking the knuckles, tearing and soiling cap and clothes—at one time or another—are practically unavoidable.

It is difficult to say which is the more expensive in the end—to own a cheap, crude jack or none at all.

If you don't use a jack, when a jack should be used, you ruin a costly tire. On the other hand a cheap jack adds tailor's bills, bills for new jacks—a considerable yearly figure, to say nothing of time and temper lost.

Made by the makers of the KLAXON in the KLAXON way. Finest materials and perfect workmanship. Handsomely finished in black enamel and polished nickel. Handles of polished coco-bola wood.

Price—ten dollars.



The Raiswell Way

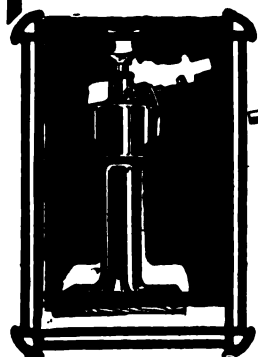
The new way is the RAISWELL way—of economy, efficiency, ease.

The jointed extension handle—30 inches long—obviates all necessity of crawling under the car.

You set the RAISWELL in place by means of the long reach handle; you operate it with a surprisingly easy swing of the brace-and-bit crank. All the time you maintain an easy, comfortable position alongside the car.

The result: No clothes ruined; no physical discomfort; no flat tires—and no broken jacks. The RAISWELL is guaranteed to last forever.

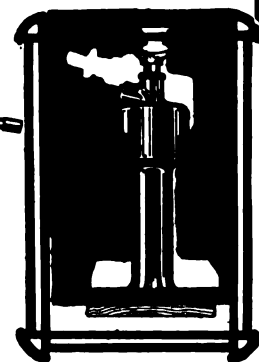
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LOVELL McCONNELL MFG. CO.
MANUFACTURERS
NEWARK, N. J.

RAISWELL

"The Perfect Lifting Device"





THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

Licensed under Selden patent.

THE MOTOR WORLD

A trade paper giving the
World's Motor News

Ten cents a copy—
Two dollars a year



The success of the
PIERCE-ARROW Car
is undoubtedly due
to the fact that it was
never built to meet
a price. A successful
car came first; price
second.

THE PIERCE-ARROW MOTOR CAR COMPANY

Licensed under Selden Patent

BUFFALO, N. Y.

Dealers and Car Owners Everywhere Have Instantly and Emphatically Approved of the United States Tire Company

The uniting of four of the most prominent tire makers in the country (Continental, G & J, Hartford and Morgan & Wright) into one huge selling organization—the United States Tire Company—has brought forth an expression of approval from both dealers and car owners that has never before been duplicated in the history of the automobile industry.

Our salesmen's reports from every section assure us that the dealers of this country are with us heart and hand.

They recognize in this new organization a way to treble sales opportunities with no additional outlay of capital.

They have instantly appreciated the advantages which the United States dealer will have in being backed up by an advertising campaign far more extensive than ever attempted before by a tire maker.

Car owners see in this combination of brains, facilities and manufacturing experience the one logical method of overcoming that bug-a-boo of every motorist—excessive tire expense.

From the standpoint of dealer, owner and manufacturer,

**United States Tires are
America's Predominant Tires**

A Prominent New York Dealer Expressed His Opinion of the United States Tire Company

This way:

“I always have been ‘strong’ for hitching my wagon to the biggest and brightest star in sight.”

“The reason I am hooking up with the United States Tire Company is that I believe a constellation of four of the biggest stars in the tire field (Continental, G & J, Hartford and Morgan & Wright) will pull my wagon along at a faster clip than it has ever traveled before.”

“This is not because of its immense size—that of itself means little—but because it has more of everything a dealer wants a company to have than any other tire concern in existence—more and better facilities, more experience, better distribution, bigger established demand and more advertising.”

“You can count on me as a United States dealer from now on.”

“The United States Tire Company will give to you, Mr. Dealer, in the shape of increased business, and to you, Mr. Motorist, in the shape of actual tire value, more for your money than has ever before been possible for any separate company with a single company’s limited facilities and manufacturing experience.”

UNITED STATES TIRE COMPANY

58th Street and Broadway, New York City



*Model 11-G, Four-Passenger Torpedo, \$2700.
121 inch wheelbase, 4 cylinder,
50 H. P. motor for all models.*

Seek Speedwell luxury above \$4000, but not below it

No car is contributing more than the Speedwell to that change in the current of public opinion which now prompts so many owners to hesitate at the highest prices which have heretofore obtained.

One of the marked tendencies of the 1911 season is a disposition to give grave thought to the question of motor car value—and the Speedwell is the inevitable gainer thereby.

Why should it not profit by closest comparison with cars of the \$4000 to \$6000 class?

As a little instance of Speedwell superiority inspect the steering gear. You will find that the Speedwell driver's safety is assured by the staunchness and precision of design. In place of the usual worm and sector gear the Speedwell boasts of a worm and complete gear. The removal of a single nut permits of four distinct adjustments of this gear, giving it four times the life of the ordinary style.

In the same way the drive line of the Speedwell has been gradually bettered until in the 1911 model a straight line drive is secured by flatter rear springs and an arched frame over the rear axle, thus enabling the Speedwell to deliver greater power

to the rear wheels than any other car of approximate bore and stroke.

Looking backward five years you find a loyal and satisfied Speedwell following—a mechanical reputation without spot or blemish.

It is a car of real beauty—the handsomest car in America in the opinion of many motorists.

Its makers believe that they could give no more to the buyer, in grace, in beauty, in ease, in comfort, and in service, if they followed the policy which has prevailed in previous years, and asked from \$4000 to \$6000.

Speedwell cars sell from \$2500 to \$2900—and at these figures comparison is seriously and sincerely urged with the highest prices named.

The Speedwell catalog, fresh from the presses and illustrated in color, will be of assistance to any prospective motor car buyer.

It points out the various features of superiority in Speedwell construction, and otherwise is an accurate guide to what you should look for in order to be able intelligently to compare prices and values of motor cars.

THE SPEEDWELL MOTOR CAR COMPANY

Licensed under Selden patent.

50 Essex Avenue, Dayton Ohio



The Mayo—the radiator thoroughbred

¶ Permanent worth is the ultimate goal of every conscientious motor car maker.

¶ Mayo Radiators do their part in achieving it.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT

The **FISK** REMOVABLE RIM

Cannot Stick nor Bind
Unaffected by Rust or Mud

No short staybolts
No excessive weight
No special tools

The Fisk Rubber Company
Chicopee Falls, Mass.
Department 23

Write for Removable Rim Booklet—Exhibited at Boston Show
23 Direct Factory Branches



The Secret of Splitdorf Success

Genuine merit the keynote which has won the confidence of the motoring public.

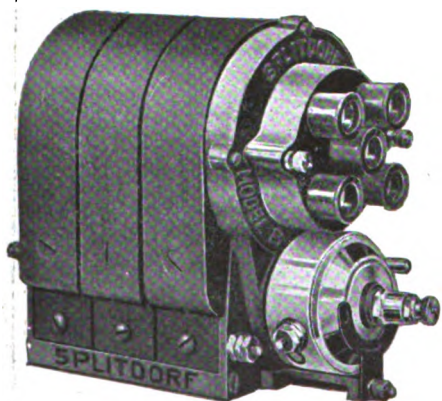
SPLITDORF MAGNETO

users form an endless chain of satisfaction—they constitute our best advertisers—every SPLITDORF user is enthusiastic over the Perfect Ignition he has day after day. The steady and constant growth of SPLITDORF Magneto sales is the best possible evidence of its wide popularity.

We make the broad claim, which is sustained by past performances in many of the big races and the severest endurance contests, that the SPLITDORF Magneto has no equal for Efficiency and Reliability.

Please ask for Magneto catalog.

SEE OUR EXHIBIT AT THE BOSTON SHOW—SPACE E 423.

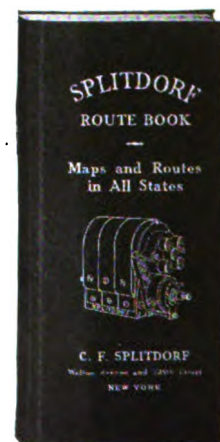


Spring Touring

Have you received a copy of the SPLITDORF Route Book?

Every tourist should have one. Contains 144 pages with 14 maps and 605 most popular routes in the United States. Handsomely bound in leatherette.

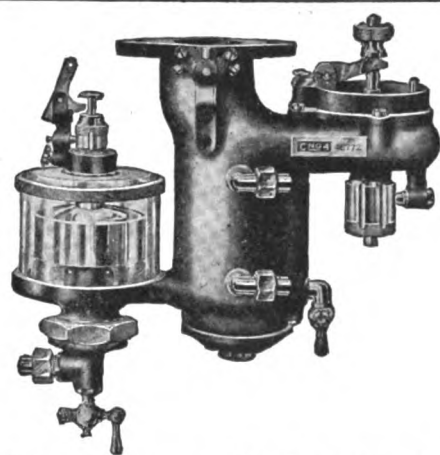
Sent postpaid on receipt of 25 cents to cover cost.



Chicago: 319 Michigan Ave.
San Francisco: 520 Van Ness Ave.
Detroit: 868 Woodward Ave.
Boston: Motor Mart.
Los Angeles: 1226 S. Olive St.

C. F. SPLITDORF **Walton Avenue and 138th Street** **New York**
Branch, 1679 Broadway

STROMBERG CARBURETORS



*Nearly every high-class six
cylinder car made in America
is equipped with this type of
carburetor.*

Send for Booklet No. 1.

"BEST BECAUSE THEY GIVE THE BEST RESULTS"

STROMBERG MOTOR DEVICES COMPANY

Main Office and Factory, 64-66 East 25th Street, Chicago. New York Branch, Automobile Building, 1926 Broadway, at 64th St. Boston Branch, Motor Mart, 91 Church St. Detroit Branch, 1211 Woodward Ave. Northwestern Branch, 1514 Hennepin Ave., Minneapolis.

Portland Branch, Chanslor & Lyon Motor Supply Co.

LIST OF DISTRIBUTORS—Chanslor & Lyon Motor Supply Co., Los Angeles, San Francisco and Fresno, Cal.; Seattle and Spokane, Wash.; Portland, Ore. Canada Cycle and Motor Co., Toronto, Montreal, Winnipeg, Hamilton, Calgary, Vancouver. Post & Lester, Boston, Worcester and Springfield, Mass.; Hartford, Bridgeport and New Haven, Conn. Auto Equipment Co., Philadelphia, Pa. Way-Mitchell-Rigdon Co., Cleveland, O. James G. Barclay, Buffalo, N. Y. Prince-Wells Co., Louisville, Ky. Von Ham-Yong Co., Ltd., Honolulu. T. H. West Coast Supply Co., Portland, Ore. Kansas City Auto Supply Co., Kansas City, Mo. Phoenix Auto Supply Co., St. Louis, Mo. Auto Equipment Co., Denver, Col. Coughlin & Davis, Cincinnati, O. Northland Motor Car Co., Minneapolis and St. Paul, Minn. Rambler Garage Co., of Milwaukee, Milwaukee, Wis. Pittsburg Auto Equipment Co., Pittsburg, Pa. Mohler & DeGress, Mexico City, Mex. Auto Supply Co., Baltimore, Md. Sharman Auto Co., Salt Lake City, Utah. Fisk Co. of Texas, San Antonio, Tex. Omaha Rubber Co., Omaha, Neb. Syracuse Rubber Co., Syracuse, N. Y. Kelley Hardware Co., Duluth, Minn.

1911 Petrel

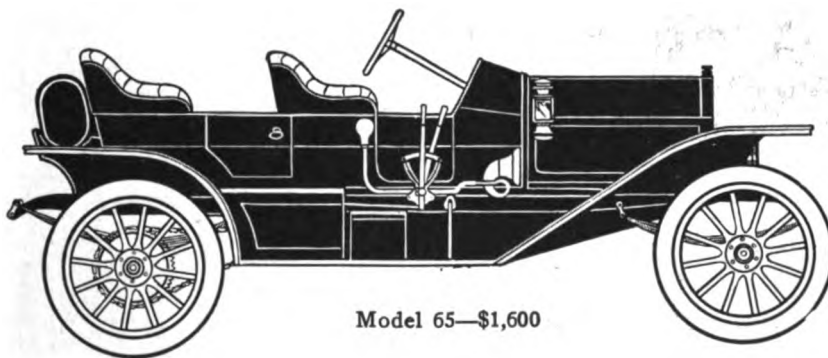
Please Don't Judge PETREL CARS by the Prices We Ask—Simply Perfect Motor Cars in 7 Models at from \$850 to \$1600—Worth Much More.

THE only infallible criterion in the judgment of a motor car, is the careful comparison part by part with the best, most renowned and most expensive cars. If you are not a millionaire you don't want that expensive, highly-advertised car;

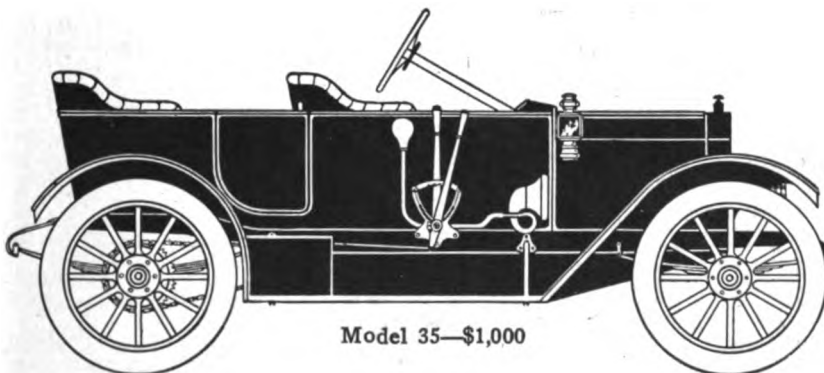
but if you want the delights of a motor car and the comfort and satisfaction that goes with a good one, you want a PETREL CAR, for it contains the same standard principles of construction, the same good, sound engineering, and good, sound parts throughout. PETREL CARS give the same service as is given by the most expensive cars, but PETREL CARS are built by a thorough business organization, by very modern methods, and sold at a price very close to their cost of manufacture.

Let us tell you all about them or tell you where you can see them.

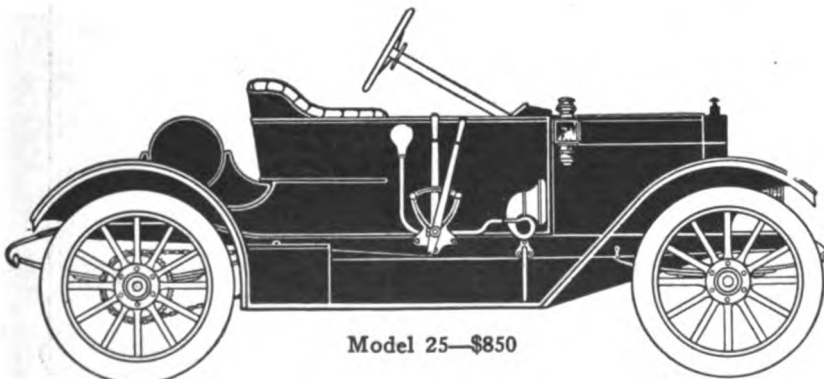
We Exhibit—At Kansas City,
Space K, Convention Hall,
Feb. 27th to March 4th.



Model 65—\$1,600



Model 35—\$1,000



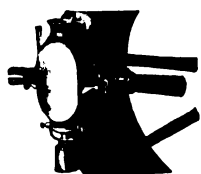
Model 25—\$850

Petrel Motor Car Co.
4th Avenue and Virginia Street
MILWAUKEE, WISCONSIN

THE ONE COMPLETE LINE OF VULCANIZERS

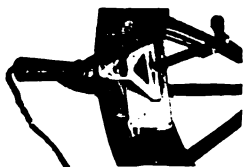
ALCOHOL **SHALER** ELECTRIC

No need this season for a jobber to give up space in his catalog to more than one line of vulcanizers. There is a Shaler for every use. Every model a complete outfit ready to do its work. Every model equipped with a perfect temperature control so that tires cannot be burned nor thermometers broken by over-heating.



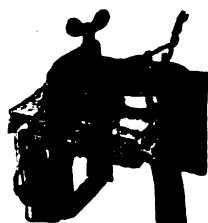
STITCH-IN-TIME (Alcohol)

For Auto Owners and Garages not having access to electric current. Operated by the roadside or on the farm just as well as in the city. Vulcanizing surfaces, 3 x 5 inches. Flat face for vulcanizing tubes with warp-proof, asbestos inlaid, metal shelf on which to lay them when vulcanizing. Concave case for vulcanizing casings while still on wheels. Cost of operation 1c. per hour. Only flame-heat vulcanizer with automatic thermostat heat control. Price, \$10.00.



TYPE D (Electric)

For Auto Owners. Vulcanizing surfaces, 7 x 3½ inches. Flat face for vulcanizing tubes, with Shaler asbestos inlaid, metal tube shelf on which two tubes can be vulcanized at a time. Concave face for vulcanizing casings while on wheels, with special plate for rim cut repairing. Cost of operation ½c. per hour. Automatic thermostat heat control. Prices, \$12.50 to \$15.00.



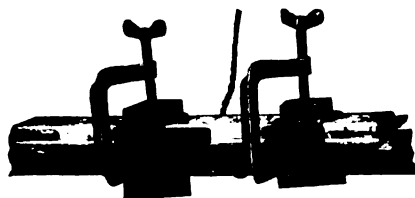
TYPE B (Electric)

For Garages. Vulcanizing surfaces, 7 x 3½ inches. Flat face for vulcanizing tubes, with asbestos inlaid, metal tube shelf on which two tubes can be vulcanized at a time. Concave face for vulcanizing casings while on wheel, with special plate for rim cut repairing, and double concave plate to give extra large surface for casing repairs. Cost of operation ½c. per hour. Rheostat heat control. Prices, \$20.00 to \$25.00.



TYPE C (Electric)

For Garage use in repairing blow-outs in casings. Vulcanizing surface, 14 inches long. Places heat inside tire, right against new fabric, doing away with the necessity of cutting away a lot of good rubber and fabric, so that the tire can be made as strong as new in the part that is blown out by the use of a reasonable amount of repair stock only. Cost of operation 1½c. per hour. Prices, \$20.00 to \$25.00.



TYPE E or "GANG" (Electric)

For Garages to repair six tubes at a time or tube blow-outs two feet long at one setting. Cost of operation 2c. per hour. Prices, \$25.00 to \$30.00.

For four years the Shaler Vulcanizers have been sold on a lasting and binding guarantee against defects. If a machine is not found *exactly* as represented, full purchase price will be refunded. Our national reputation has, in a large measure, been established by backing our guarantee to the limit.

See Them at the Shows—Jobbers, Dealers, Car Owners.

Our 1911 Proposition will interest you. Write for it.

C. A. SHALER CO., Manufacturers, 404 Fourth St., Waupun, Wis., U. S. A.

No Nuts

No Bolts

No Clamps

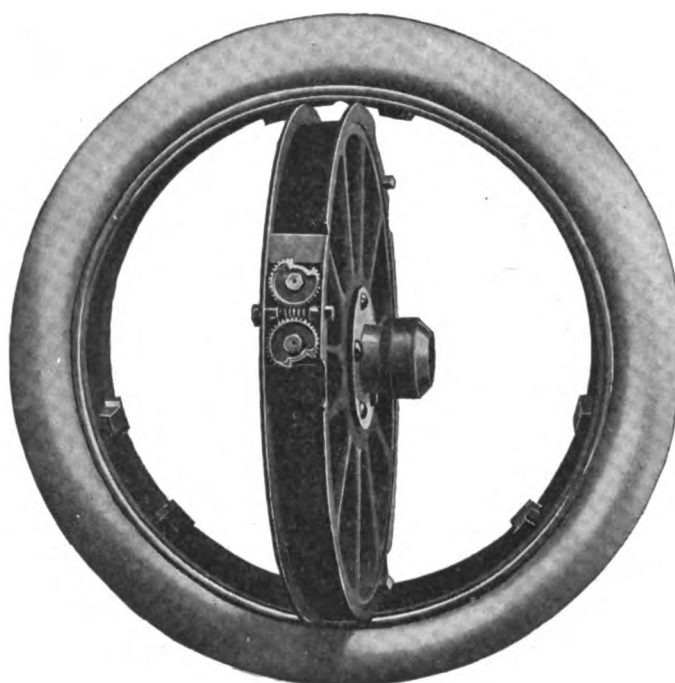
No Junk

No Bunk

Adopted as standard equipment on all Benz cars.

Owners of Peerless, Packard, Pierce-Arrow, Lozier, Chalmers, Cadillac, Benz, Pope-Hartford, Winton and many other makes of cars are ordering us to equip their individual cars with our Demountable Rims, and in a great many instances are specifying them when ordering new cars.

We manufacture our own device and guaran



tee it for life not to be affected by any weather conditions.

Nothing to lose in the sand, dirt or snow. Just mechanically comes off and is mechanically forced on again.

Designed originally as a demountable rim to do away with tire trouble, and for use especially on pleasure cars, it has since developed to the safest, simplest and quickest demountable ever produced.

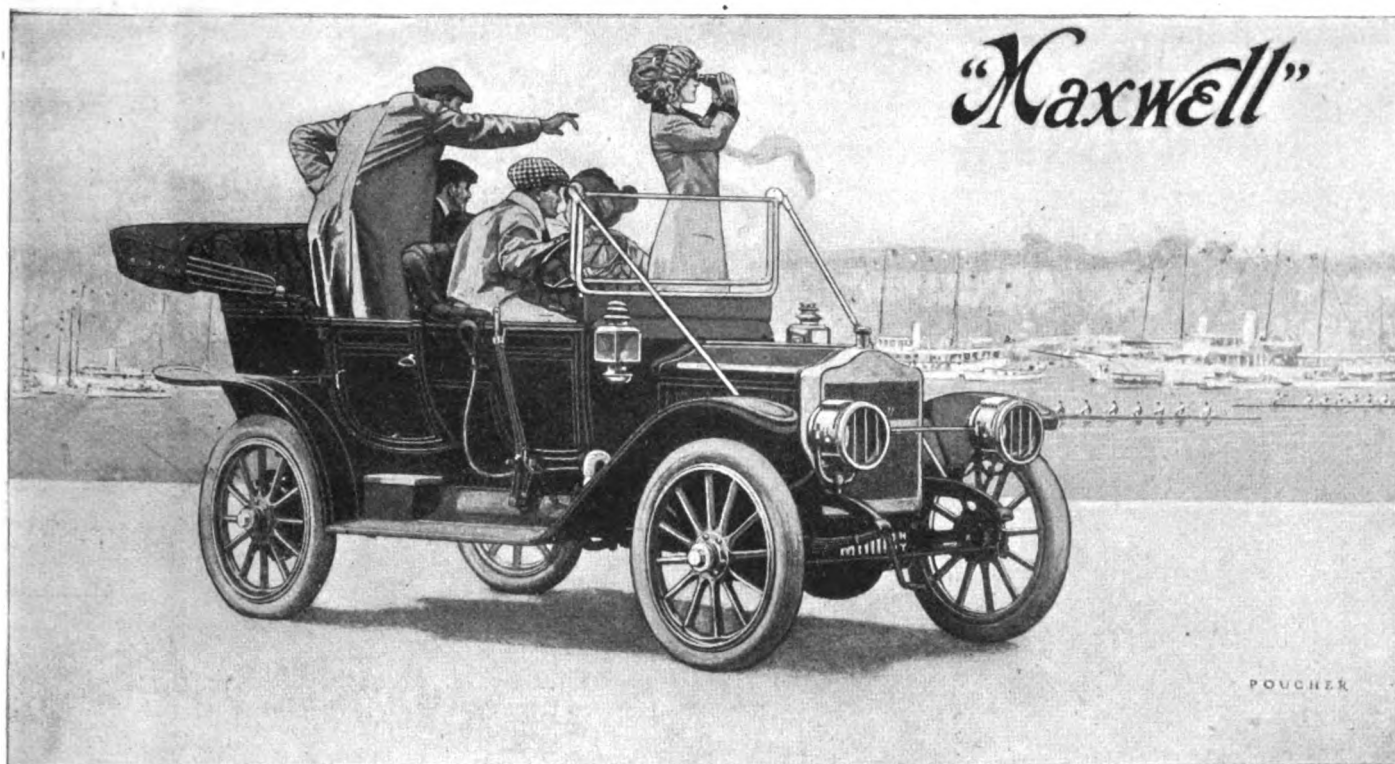
I consider the Booth perfect, and use them exclusively on all my cars. —BARNEY OLDFIELD.

It's a Booth! That's all you need know about a demountable rim. All engineers or any convention of engineers invited to prove that our rim is not mechanically perfect.



The Booth Demountable Rim Co.

CLEVELAND, OHIO



MODEL EA—4 cylinder, 30 horse power.

Famous Model at New Price

ABSOLUTELY the best five-passenger moderate-priced automobile made. Stylish, roomy, with all the attributes of cars costing as much again, this model deserves your closest inspection. Holder of world's non-stop record for traveling 10,000 miles of road without stopping the motor; winner of both class and sweepstakes trophies in 1910 Munsey Historic Tour. One of the Maxwells that assisted in establishing the best team score in 1910 Glidden Tour. Its achievements are numerous—consistent for reliability and efficiency.

\$1400

Including magneto, gas lamps and generator.
Top and windshield extra.

Prior to January 1st this model sold at \$1600.

The story of the readjustment of Maxwell prices due to our affiliation with the United States Motor Company is fully told in our new catalog.

These Books Free—"How to Judge an Automobile," a practical treatise on motor cars; Touring Booklet, Maxwell catalog and other literature to aid you in better deciding your motor car investment, are yours for the asking. A postal will do. Just say, "Mail Books."

Sale of Maxwells to Date

Sold to Jan. 31, 1911 - 41,273
Sold during Feb., 1911 - 1,392
Maxwells in use today 42,665

Watch the Figures Grow

Maxwell-Briscoe Motor Company

DIVISION OF THE UNITED STATES MOTOR COMPANY

Vale Street, Tarrytown, N. Y.

Factories Tarrytown, N. Y.

Newcastle, Ind.

Providence, R. I.

Member of the A. L. A. M.



FLANDERS
20

Coupe

\$975

Silent as an electric; amply efficient in its motive power; complete to the remotest detail in the refinement of its body; ready at any time to travel anywhere, the Flanders "20" Coupe is the ideal vehicle to carry Milady on her expeditions into the shopping district or on her round of social duties.

Its comfort makes it a veritable drawing room on wheels.

This Coupe is luxuriously equipped, is finished in dark green enamel with nickeled trimmings, has English broadcloth upholstery, and is fitted with interior and exterior electric lights.

The E-M-F Company

Automobile Manufacturers
Detroit, Mich.



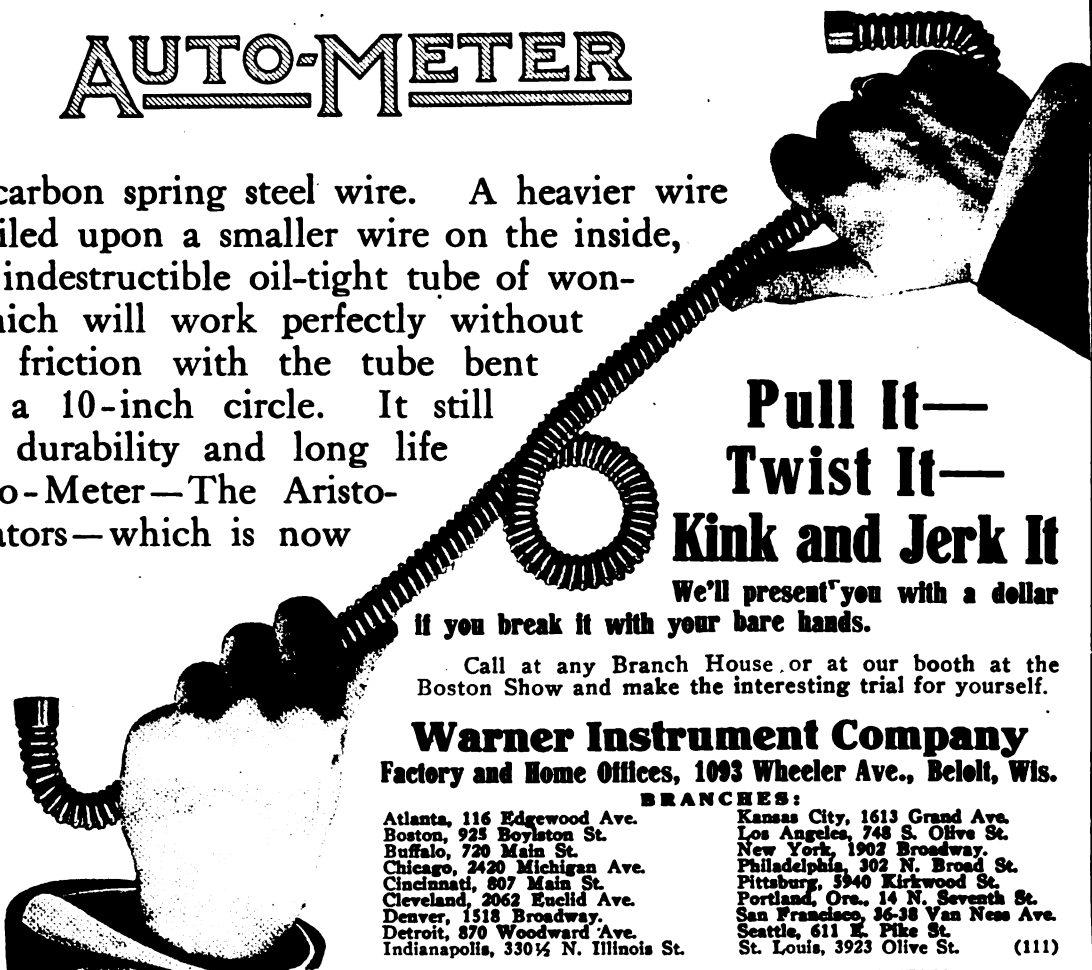
Speed Indicator Shaft Troubles Wiped Out

The only troubles ever experienced with the Warner Auto-Meter (bar accidents or misuse) have been Shaft Troubles. Notwithstanding that the Warner shaft has proved itself by far the most sturdy and free from trouble of them all. The new unbreakable Warner Shaft overcomes this small percentage—makes the Warner practically a **trouble-proof** instrument which will remain supremely accurate, dependable and reliable during the life of many cars.

The New, Unbreakable Driving Shaft of the

WARNER
AUTO-METER

is made from high carbon spring steel wire. A heavier wire on the outside is coiled upon a smaller wire on the inside, making a practically indestructible oil-tight tube of wonderful flexibility, which will work perfectly without jamming or undue friction with the tube bent into a segment of a 10-inch circle. It still further adds to the durability and long life of the Warner Auto-Meter—The Aristocrat of Speed Indicators—which is now in use on at least 90% of all pleasure vehicles costing \$2,000 or more, and is the invariable choice of the auto owner who can afford its purchase.



**Pull It—
Twist It—
Kink and Jerk It**

We'll present you with a dollar

if you break it with your bare hands.

Call at any Branch House or at our booth at the Boston Show and make the interesting trial for yourself.

Warner Instrument Company
Factory and Home Offices, 1093 Wheeler Ave., Beloit, Wis.

BRANCHES:

Atlanta, 116 Edgewood Ave.
Boston, 925 Boylston St.
Buffalo, 720 Main St.
Chicago, 2420 Michigan Ave.
Cincinnati, 807 Main St.
Cleveland, 2062 Euclid Ave.
Denver, 1518 Broadway.
Detroit, 870 Woodward Ave.
Indianapolis, 330½ N. Illinois St.

Kansas City, 1613 Grand Ave.
Los Angeles, 748 S. Olive St.
New York, 1902 Broadway.
Philadelphia, 302 N. Broad St.
Pittsburg, 3946 Kirkwood St.
Portland, Ore., 14 N. Seventh St.
San Francisco, 36-38 Van Ness Ave.
Seattle, 611 E. Pike St.
St. Louis, 3923 Olive St. (111)



Little Chapters of Quality

Chapter the Second

The reputation of the manufacturer and the security of the stockholder's investment, the safety of the car owner, his family and friends, depend upon the way the car "stands up."

If parts break at a critical moment, the owner may be injured and the reputation of the manufacturer lost. In any case, a broken part requires replacement. That means expense for someone, either the manufacturer or the car owner, and, when all is said and done the pertinent question is: "Wouldn't it have been better to buy the best in the first place?"

The front axle is one of the vital points of any car; hence on the production of dependable front axles has been lavished the utmost skill of the designer, the metallurgist, and the experienced factory man.

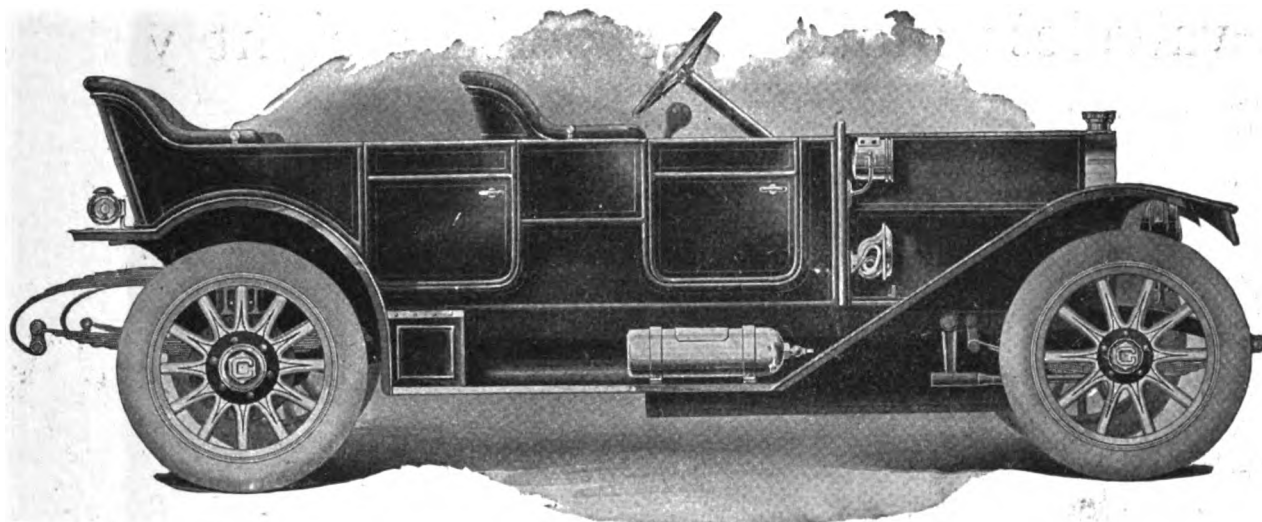
Any car maker can secure satisfactory, dependable, tried-out front axles if he will; and they do not cost much more than the other kind.

Timken-Detroit Front Axles are used on cars of the highest reputation. They give an added selling value to any car. They insure the security and satisfaction of the owner. Full information if you write.

The Timken-Detroit Axle Co.

Detroit, Michigan, U. S. A.





Model H 5 Passenger Fore Door Touring Car—\$1750

COLBY

Built to Compete with \$3000 Cars

We wish to extend our thanks to the experts and others who have been so pronounced in proclaiming the Colby "40" the best motor car ever put on the market selling for less than \$2500.

It easily develops 5 to 50 miles an hour without overworking the motor, or causing any unpleasant vibration of the car.

The Colby is designed for comfort, as well as appearance, having the grace and beauty only found in high priced cars.

In our construction, we have used only the very best workmanship and material throughout. A glance at our specifications will prove it. Compare them with cars selling for three thousand and more.

We would be pleased to have the most skeptical call at our exhibit and be convinced.

SPECIFICATIONS

Body: Standard touring straight line.
Seating capacity, five. Fore-doors.
Motor: Four Cylinder—H. P., 35-40.
Bore, 4 $\frac{1}{4}$; stroke, 5 $\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.
Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.
Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system.
Carburation: Carburetor—special fuel feed—gravity.
Clutch: Type—multiple disc. Friction surfaces—steel to steel.
Gearset: Selective—located amidship. Three speeds forward.
Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.
Bearings: Crankshaft—three large, Plain. Camshaft—three, plain. Clutch

—spindle, plain. Clutch, thrust, ball.
Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball. Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white bronze.
Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36 x 4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type.

Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.

Demountable Rims:

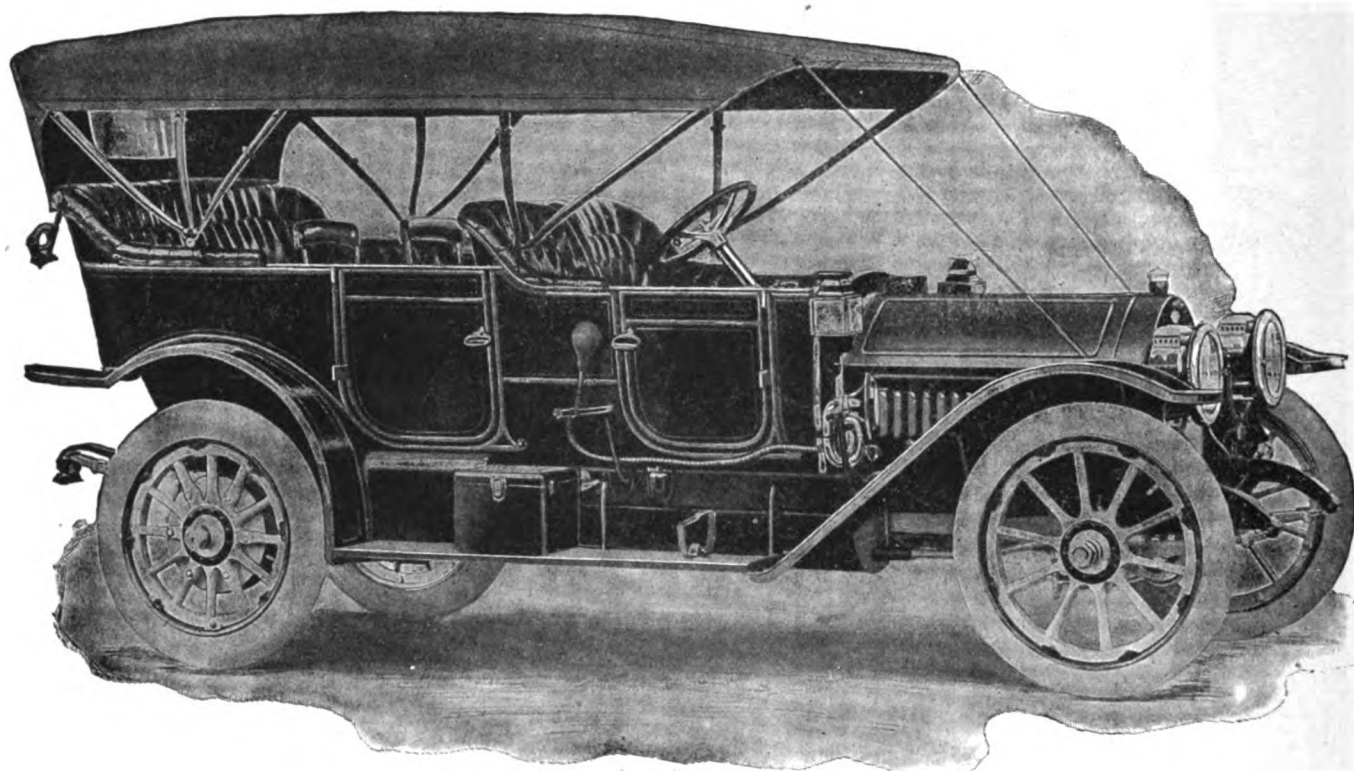
Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.

Control: Hand levers on steering wheel and foot accelerator.
Price: \$1,750, f. o. b. Mason City.

COLBY MOTOR CAR COMPANY, Mason City, Iowa

New York Representative—EMPIRE CITY AUTOMOBILE CO., 1800 Broadway.

This valveless motor was perfect eight years ago



All models equipped with Amplex self-cranker

30-50 Fore-door
Touring Car

Amplex

\$4,300

VALVELESS — SELF-STARTING

The valveless motor, and all that it means in the elimination of excess trouble and expense from motor car operation and maintenance, is not a dream of the future.

It is a reality of today, and its most perfect development, as applied to a car of the highest type, is to be found in the valveless Amplex.

This was as true in 1903 as it is today. In 1903 we built our first cars, and from that year to this, we have not made a single material change in the motor design.

For eight years, then, the Amplex has been a success, while gas engineers the world over stood by and waited.

Now, in every quarter, these engineers are occupying themselves with study of and experiments with the valveless motor principle.

In the light of your experience with the ordinary automobile engine and its valves, imagine what the absence of valves would mean to you.

Picture the satisfaction of driving your car, day in and day out, with never a moment's lay-up because of valve trouble.

No valve grinding, no adjusting, no timing, no repairing, no replacement of small parts—no expense to be charged up to valves.

You would have, moreover—if you owned the valveless Amplex—an engine that never falls off in power because of poorly adjusted, ill-working valves; an engine that actually develops more power than any ordinary motor of the same cylinder size.

You would have more reserve power at your command on a bad road or a stiff climb, and the engine would deliver its power without the slightest break or tremor in its flow.

Caught in traffic congestion, you would throttle down to a slow walk, and speed up again to the limit without shifting gears or touching clutch.

In every detail of design and construction, the Amplex is a car worthy of its wonderful valveless engine—a car that deservedly takes its place with the finest and best produced in this country and Europe.

And over all, it has the tremendous advantage of its perfect valveless motor.

If you are one of those inclined to regard the valveless motor with skepticism, an understanding of the Amplex will sweep aside your last doubt.

Study the valveless Amplex by inspecting the car and riding in it, if we are represented in your locality. Otherwise, send for the catalog.

SIMPLEX MOTOR CAR COMPANY, Dept. D, Mishawaka, Ind.

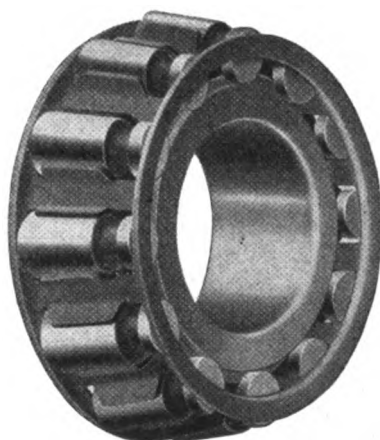
ADJUSTABLE

Bearings Have Superior Advantages
Over All Other Anti-Friction Bearings.

Timken Roller Bearings

are designed with the principle in mind that all moving bearing surfaces
DO WEAR.

- ❑ Other types—such as plain, straight or parallel roller, and annular ball bearings—are non-adjustable.
- ❑ Hence, the slightest wear not only means rapid deterioration and early replacement, but also is communicated to other parts—gears, etc.—that are dependent upon shaft alignment.



Timken Roller Bearings

provide adjustability to start anew after even the slightest wear, and, The tapered carrying contact also provides an equal capacity for side loads.

- ❑ THE ONLY COMBINED RADIAL AND END THRUST BEARING, that has been absolutely proven, is produced by

THE TIMKEN ROLLER BEARING CO.

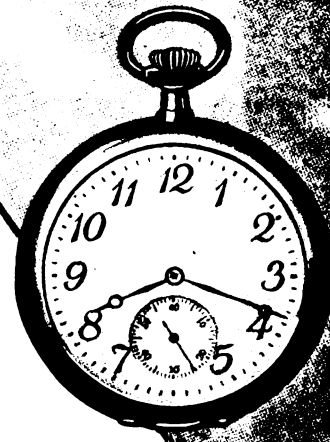
CANTON, OHIO, U. S. A.

A CHEAP WATCH



INACCURATE

A CHRONOMETER

ABSOLUTELY
ACCURATE

**WHICH
DO YOU
PREFER?**

You can purchase an inaccurate watch at a "cheap" price. You can buy an accurate, reliable watch at a fair price. Which do you prefer—accuracy or guesswork? Same thing with speed-indicators.

Jones Speedometer

is absolutely accurate—as accurate, as thoroughly reliable as a fine chronometer. It's an instrument of precision built by skilled watchmakers on the accurate principle—Centrifugal Force. The Jones can be depended upon—thoroughly reliable under all conditions. You're mighty careful about the accuracy of your watch. Observe the same care in the selection of a speedometer. Don't buy "guesswork"—don't buy inaccuracy. Get the JONES for your car and be sure.

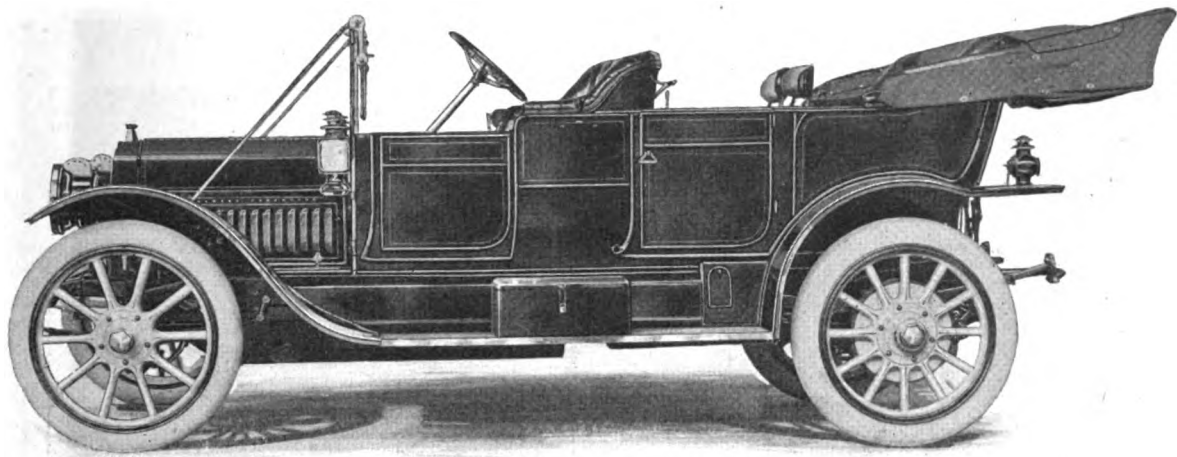
The Jones is absolutely impervious to heat, cold or electrical influence—it's "Geared-to-the-Truth"



Handsome in design and finish. An ornament to any car—it's the "class" of all the speedometers.

Be sure to see the complete Jones Line at the Boston Show.

JONES SPEEDOMETER DEPT.,—UNITED MANUFACTURERS
250 West 54 Street, New York



WELCH DETROIT MODEL T—1911

Here's a Car That Any Dealer Can Stand Back of to the Limit

It's the biggest \$8,100 worth ever offered—absolutely standard in design and construction. You can't find its equal anywhere for less than \$4,500 to \$5,000.

Note the clean cut, classic design—every line the embodiment of strength and power. Note also the completeness of the equipment. \$8,100 covers everything from trunk rack to speedometer. It isn't necessary for the buyer to spend several hundred dollars for accessories.

SPECIFICATIONS

Body—Touring type, seven passengers, detachable fore doors.

Color—Royal blue or green body and gear with gray wheels; or solid blue or green throughout.

Motor—Four cylinder, 45-50 h. p., T-type, 5x5. Water cooled. Controlled by spark and throttle levers on top of steering wheel and foot accelerator. Motor suspended on sub frame.

Ignition—Jump spark system, Bosch magneto and reserve set of dry cells.

Lubrication—Self contained system, oil circulated by pump, reservoir under crank case, constant level of oil maintained.

Carburetor—Schebler, special design.

Gasoline Capacity—18 gallons, gravity feed.

Frame—Pressed steel.

Clutch—Cone, leather faced, our special design, controlled by foot lever.

Transmission—Sliding gear, selective type, three speeds forward and one reverse, controlled by side lever.

Drive—Shaft.

Springs—Semi-elliptic, long and flexible.

Brakes—Internal expanding and external contracting on rear wheels, controlled by side and foot levers.

Steering Gear—Irreversible type.

Wheels—36x4 front, 36x4½ rear. Goodyear quick detachable tires, 122-inch wheel base, 56-inch tread.

Weight—3,700 pounds.

Equipment—Gas Headlights, Oil Lamps, Tail Lamp, Prest-O-Lite Tank, Horn, Auto Jack, Repair

Outfit and Pump, Trunk Rack, Robe Rail, Foot Rail, Tools, Glass Front, Top with Hood and Driver's Curtains, Tire Carriers, Speedometer and Clock, Shock Absorbers.

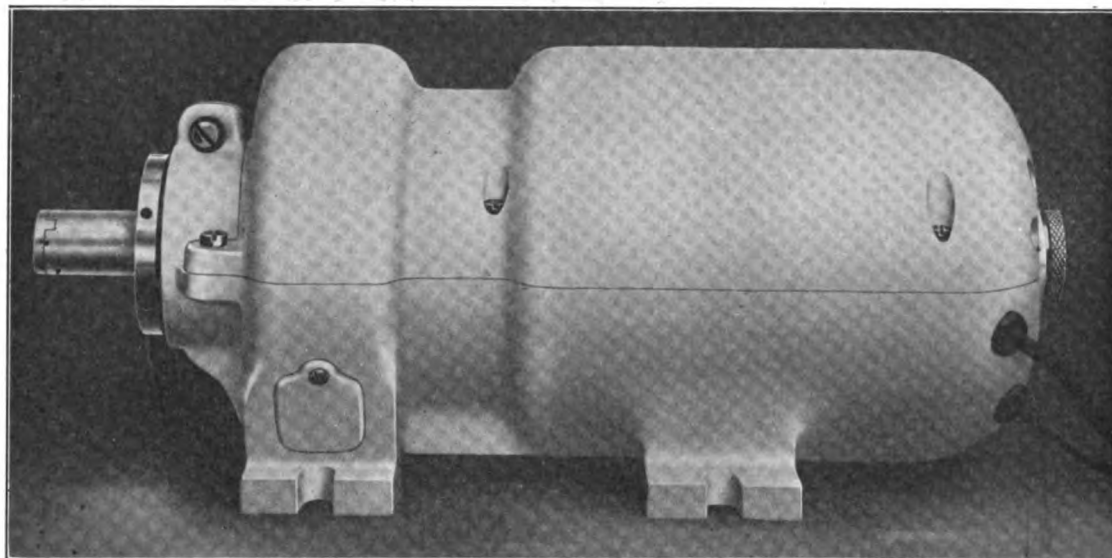
Welch
DETROIT

Price, \$3,100

We Have An Attractive Proposition For Responsible Dealers. Ask For It

THE WELCH COMPANY OF DETROIT

DETROIT, MICHIGAN



DYNAMO SYSTEM TYPE "C"
One-half life size. Weight complete, as shown, 19 1-2 lbs.

The Modern, Up-to-the-Minute Method of Automobile Lighting

GRAY & DAVIS Dynamo System

It is only a question of time when every automobile will be equipped with electric lights—eminent engineers, manufacturers, dealers, owners agree on this. Why not be a little ahead of the time? Get this system for your car—it is the greatest convenience ever offered the motoring public.

If You're a Manufacturer

Equip your cars with the Gray & Davis Dynamo. Makes your automobile a COMPLETE car—a modern car.

Car buyers are awake to the advantages of this remarkable dynamo. Why not write us for full particulars. Let us explain the simplicity of operation, the real advantages of this complete electric plant. Better write to-day.

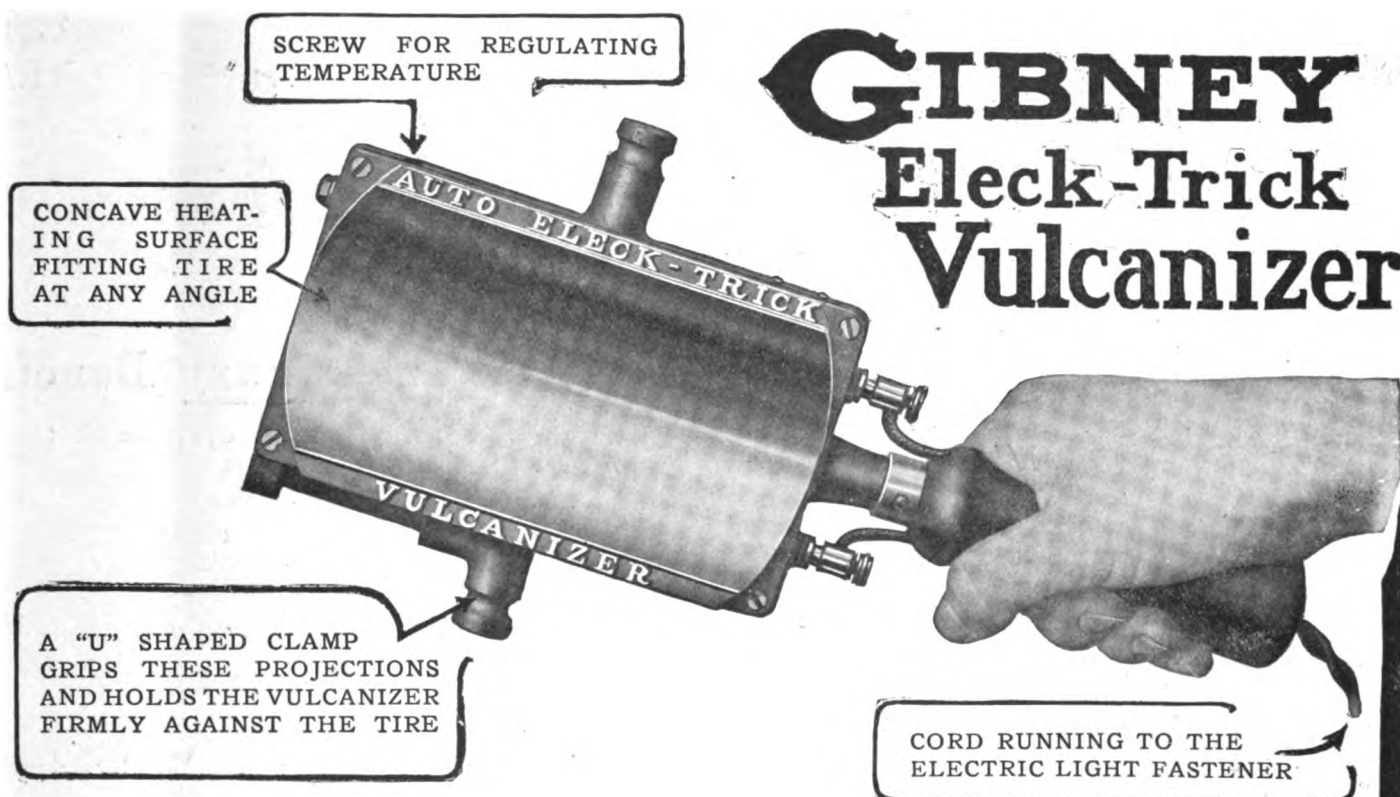
If You're a Car Owner

Get this Dynamo System for your car. Lights your lamps with electricity. Charges your batteries. Possesses features found in no other system.

Constant Speed. Governor takes care of excessive speed. Compound Wound when lighting lamps. Shunt Wound when charging batteries.

Absolutely reliable—unusually simple. Write us to-day for interesting catalog.

GRAY & DAVIS Manufacturers of
Automobile Lamps **Amesbury, Mass.**



We show here a reduced illustration of the Gibney Eleck-Trick Vulcanizer—which, with complete tool kit and clamp, can be had from dealers or direct from our Philadelphia or New York stores.

The price is \$15, carriage prepaid.

The Gibney Eleck-Trick Vulcanizer is a simple, efficient apparatus, capable of doing anything your repair man can do. It is not claimed that it will effect a BETTER repair, but it IS claimed and guaranteed that it will do it just as efficiently and dependably; more conveniently, economically and quicker than any other method.

This implement was devised for the use of car owners—those who realize how rapidly tires depreciate and who know the annoyance of time and money lost in the process of repairs in the public garage or shop. Years of service prove its sterling worth.

An electrical connection, made by screwing the plug into any electric light socket (just as you would screw a lamp in) furnishes heat (up to 285 degrees, if necessary) for quickly and thoroughly vulcanizing any bruise, abrasion or cut on your tire.

And you can do the work yourself—at any place and at any time, and a cost of a few cents will cover the operation.

There are over 5,000 of these money, time and labor-saving devices now in use. We want YOU to know and use the Gibney Eleck-Trick Vulcanizer.

A tire properly cared for at the proper time will increase its length of life one-third. Look over your tire up-keep bills and figure what this means to you! Then—

Take a minute off and write for our booklet—or to save time, send us your order. After you have read the booklet, you will doubtless supply yourself with one at any rate.

Remember the price—\$15 for complete outfit, including a tool kit fully equipped.

JAMES L. GIBNEY & BRO.

215 N. Broad Street, Philadelphia

248-52 West 54th Street, New York

Diamond TIRES

Is Not and Never Could Be Founded on Imaginary Benefits

Twelve years of Quality and Results have Written The Record. It is an open book to any investigator.

The users of

DIAMOND CLINCHER TIRES
DIAMOND MECHANICAL TIRES
DIAMOND FISK TIRES
DIAMOND STRAIGHT SIDED TIRES

have always received Tangible benefits—Diamond quality and Diamond mileage.

You may select the type of tire, the kind of fastening and the rim.

There is nothing exclusive, no matter who makes the tire, about these details. We will furnish whatever you prefer.

The exclusive feature which we alone can furnish is

DIAMOND QUALITY

THAT COUNTS. It gives you the lowest per year and per mile tire cost.

Because we put Quality and Quantity of Rubber, Cotton, Workmanship, Experience and Skill into Diamond Tires to an extent unequaled by any other maker in the world.

Twelve years of such work have maintained (as they also explain), Diamond Supremacy and it could be accomplished or accounted for in no other way.

When you buy Diamond tires you get more for your money—more rubber, better rubber, much thicker treads, tires that last longer, puncture rarely, stone-bruise less easily—things that COUNT!—Not mere talking points which cost the manufacturer nothing and cleverly distract your attention from the real issue.

New tires, new rims, new fastenings, new talking points, often cleverly presented, often to the uninformed most plausible—come and go, but Diamond Quality and Diamond Supremacy, hand in hand, have remained constant and will continue so if we are right in fixing our attention on the essential principles—

EXCELLENCE IN MATERIALS AND DESIGN,
ABUNDANCE OF MATERIAL—NO SKIMPING,
NO MISREPRESENTATION, DIRECT OR INDIRECT,
and THE SAME KIND OF APPLES ALL THROUGH THE BARREL.

It goes without saying that it costs us more to make Diamond tires as they are made than if they were thinner, lighter and weaker.

We have to ask more for them from the automobile manufacturer. That is why some builders refuse to furnish Diamond tires when you specify them.

You know that manufacturers of high priced cars without exception will furnish Diamond.

DOES THAT SUGGEST NOTHING TO YOU?

Some printed matter that gives valuable information about average tire upkeep expense, etc., on request. Ask for Booklet M. W.

THE DIAMOND RUBBER COMPANY, Akron, Ohio

Stores and Service Stations in 49 Principal Cities, Covering Every Section

THE ATWATER KENT SYSTEM

Consider Your Ignition Problem Now!

NOT when the old ignition troubles have reasserted themselves. Not when you have begun to question whether the fun of a ride is worth that secret worry as to when you and your guests will get home. Not when you begin to have haunting suspicions of spark plugs, cables, coils, interrupter, carburetor and gasoline. Not when you grudge the time it will take you to make the change, and cling to the old unreliable system until you are thoroughly sick of the whole matter.

If a change is to be made, make it now, before the car is put into service this spring. If you are going to look into the Unisparker, do it now. It will take no longer now than later, and you will have knowledge, not guesswork, for guidance.

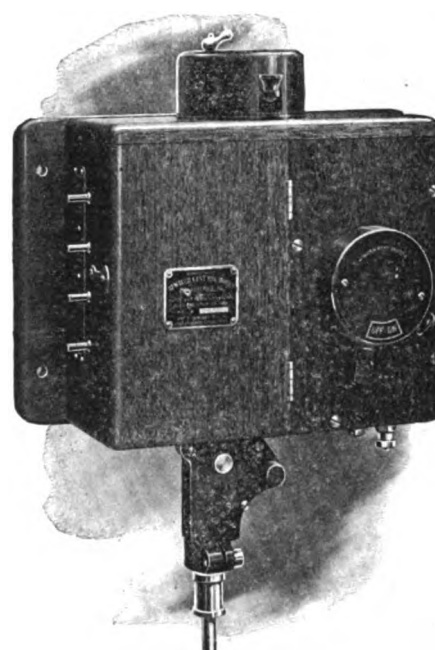
By all means, look up some one who has used the Unisparker or the Spark Generator and ask him.

Yes we are always glad to answer questions. Ask our inquiry department about the Unisparker as applied to your car.



Type "B"

UNISPARKER



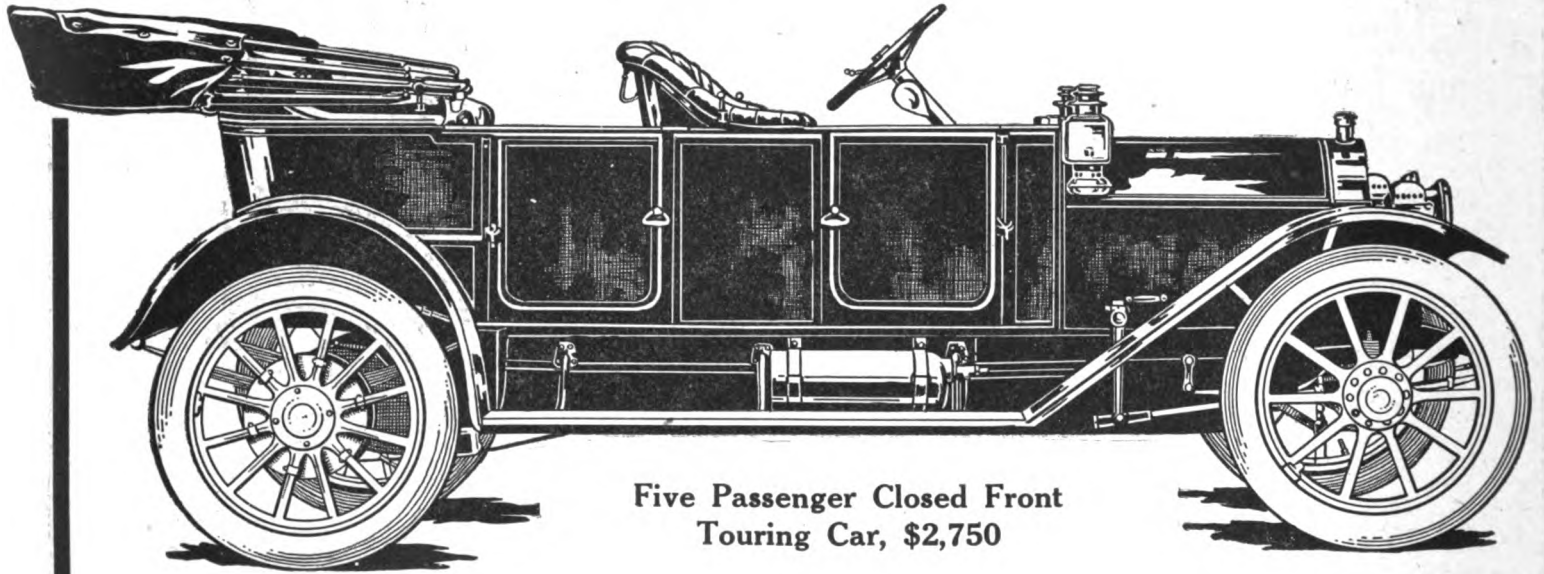
Spark Generator

ATWATER KENT MFG. WORKS

33 NORTH SIXTH ST., PHILADELPHIA, PA.

THE MARMON

"The Easiest Riding Car in the World"



Five Passenger Closed Front
Touring Car, \$2,750

THE great popularity of the Marmon has been won on merit.

Its world-wide reputation for durability and reliability won in many a long and hotly contested race, and the prestige of the institution manufacturing it, have helped somewhat, but the tremendous increase in the sales of the Marmon has been mainly due to the thoroughly satisfactory service it has given to owners at very modest expense of tires and upkeep.

*Its excellence lies in correctness of design,
good proportion, well balanced construction,
and materials and workmanship of the best.*

NORDYKE & MARMON CO., (Estab. 1851) Indianapolis, Ind.

Sixty Years of Successful Manufacturing

"Less Haste—More Speed"

Proven True of Inter-State Policy

A dependable watch is not hurried in the making.

It takes time to cut out a great diamond.

If a motor car is shot through the factory, its parts hurriedly turned out and assembled into what acts like a real automobile for only a few months, the buyer of that car naturally regrets his choice. He is liable to look upon all pleasure cars as luxuries.

It was a mighty expensive luxury to some hundreds of thousands who went motor-mad and now repent their ownership of an "assembled" or a "we-turn-out-so-many-hundred-a-day" cars.

Too many cars were "turned out" into the world to fill that great unhealthy demand. The enemy of the automobile today is the man who blindly plucked the "citrus car," the unripe variety of automobile.

The slogan "Less haste, more speed" nailed to every wall of our factory for three years, has held our output down to where it belongs. The first cars we built were **weeks** in the factory. We have been slow and orders-behind ever since. But we **won't** hurry so fast that the tiniest bit of construction is slighted.

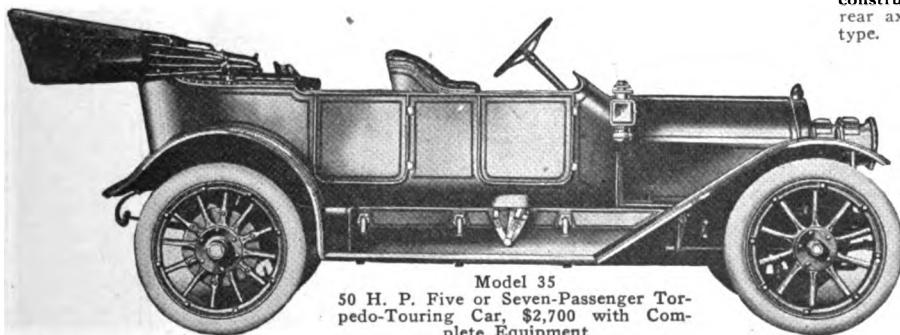
Therefore, "more speed" towards nation-wide popularity. Now we have a larger factory and we build more cars—but no faster than ever.

And our "high quality-sane-price" idea is simply meeting **magnificent** applause. We have demonstrated that it can be done—the building of a perfect and long-life car at a reasonable cost.

New catalog tells more and is free to all interested.

Use Reminder below.

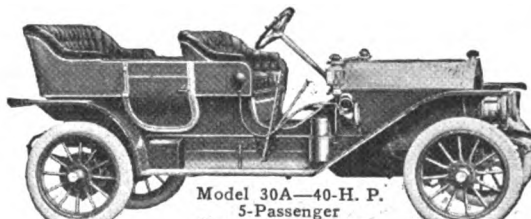
Inter-State



Model 35
50 H. P. Five or Seven-Passenger Torpedo-Touring Car, \$2,700 with Complete Equipment



Model 34A—40-H. P.
\$2,000
Special Equipment



Model 30A—40-H. P.
5-Passenger
Touring Car, \$1,750

SPECIFICATIONS

Inter-State "40" 1911 Models

The motor for our 6 "40" models is rated at 40 h. p. Average speed of 1,500 revolutions a minute. Bore, $4\frac{1}{2}$ inches. Stroke, 5 inches. L-head type. Valves all on one side of large diameter, nickel steel heads, carefully ground stems. Push rods with rollers of large diameter, providing rolling contact on cam shaft. Valve adjusting screws with fibre cushion heads, insuring silent valve action. Crankshaft special carbon steel, drop forged and double heat treated. Mounted in three bearings of large dimensions lined with die cast white brass of best quality and lubricated by force feed gear pump. Constant level splash oiling system, insuring accurate oiling at all times. Oil reservoir two gallons capacity. Sight feed in easily discernible position on dash, showing amount of oil flowing to bearings at all times.

Clutch and transmission housed in integral oil tight case, separated by retaining wall allowing use of special oils for each unit. Clutch of improved cork insert design, operating in oil. Eight cork insert discs enclosed between nine steel discs, providing contact of cork on steel. Throwout fork and collar provided with ball thrust, assuring long life. This construction provides a wonderfully smooth-acting clutch of long wearing qualities and gradual, easy, positive engagement. Gearset of selective type with three forward speeds and one reverse. Extra heavy pitch gears of chrome-vanadium steel, running in oil. All clutch and transmission bearings are imported annular ball type.

50 Horsepower Torpedo-Touring Car

Five or Seven-Passenger, \$2700; Full Equipment.

This new and larger model incorporates the best features of the Inter-State "40." With a number of advanced points of construction, never before offered in any but the highest-priced machines. T-head type motor with separate inlet and exhaust cam-shafts. Suspended at three points, precluding any possibility of frame stresses being transmitted to the motor. Crankshaft supported by three bearings of especially liberal dimensions. Conservative rating of 50 h. p. at 1,500 revolutions per minute. Valves $2\frac{1}{4}$ inches in diameter, nickel steel heads with carefully and accurately ground stems. Separable valve guides. Extra large frictionless, roller push rods with fibre-cushion adjusting screws. All rollers and cam-shafts case-hardened and ground to exact dimensions. Camshaft and pumpshaft bearings eccentric, allowing very accurate adjustment of reduction gears. This feature with double gear on crank-shaft assures noiseless operation.

Special lubricating system with improved distributing pump assures positive delivery to the three main bearings. Oil overflow from bearings is retained in pockets in the false bottom of the oil-pan, allowing splash spoons on connecting rods to dip slightly. Sight feed located on dash, readily discernible showing amount of oil supplied to bearings at all times.

Mechanically operated cooling system actuated by centrifugal pump. Extra large water manifolds and piping. Radiator, cellular construction and of ample capacity to insure cooling of motor at all times. Two complete ignition systems comprising dry batteries and four-unit coil and a specially imported high-tension magneto. Each system is provided with separate set of spark plugs.

Front axle of double-forged I-beam section, carefully heat-treated. Steering knuckle provided with ball thrust bearings to facilitate turning and mounted on extra large hardened bolts.

Rear axle specially designed for Inter-State cars. Full floating type, completely provided with adjustments for accurately determining position of driving gears. Pinion shaft, pinion gear and differential mounted on single steel casting, insuring permanent alignment. Special torsion tube construction eliminates the use of torsion bars or distance rods. All wheel, rear axle and driving-shaft bearings of extra large imported annular ball type.

Brakes located on rear axle of internal expanding design. Service or foot actuated brake operating on drum 16 inches in diameter. Emergency brake operating on 12-inch drum. All brake bands with $2\frac{1}{4}$ -inch face, fully protected from dust and dirt.

Pressed steel frame narrowed in front and raised in the rear to allow full action of rear springs. Front springs semi-elliptic type, 40 inches long. Rear springs $\frac{3}{4}$ elliptic, 48 inches long. All springs $2\frac{1}{4}$ inches wide, of special vanadium steel. All spring bolts provided with grease cups.

Tires, 36 by $4\frac{1}{2}$ inches with demountable rims. Wheel-base, 124 inches. Tread, 56 inches. Full equipment.

Inter-State Automobile Co.

MUNCIE, IND.

A Reminder

Inter-State Automobile Co.
Muncie, Indiana

M. W.-32

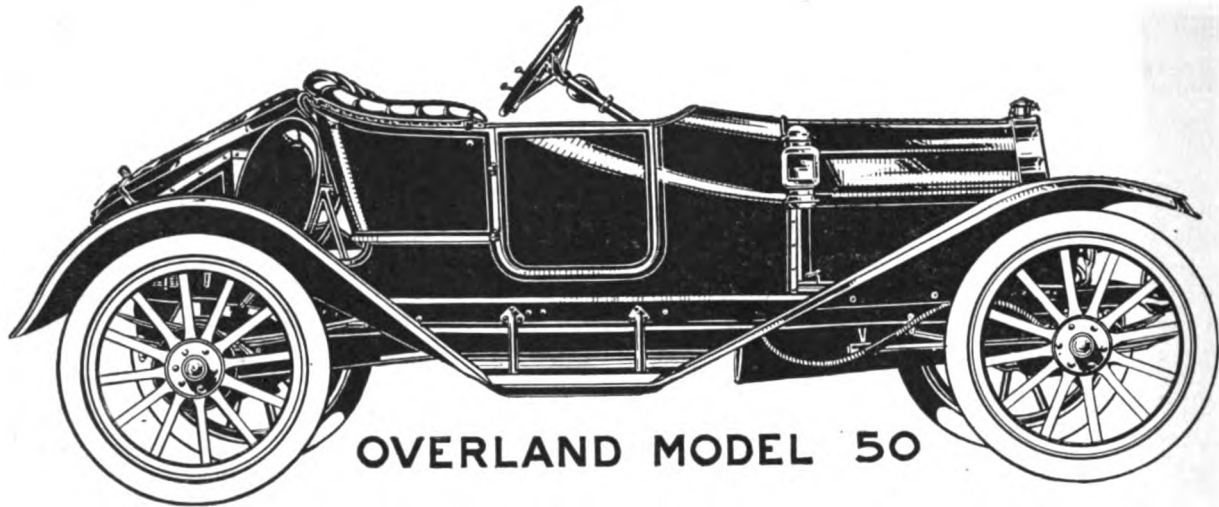
Send me your Free Catalog.

Name

Address

Overland

A public utility for every avenue
of business requirement.



Business and professional men whose work requires a car for hard service—a car ready at all times for long rough trips, or short fast runs—in fact, a car for all around city and country use, will appreciate the practical features in this car.

T H E M O T O R

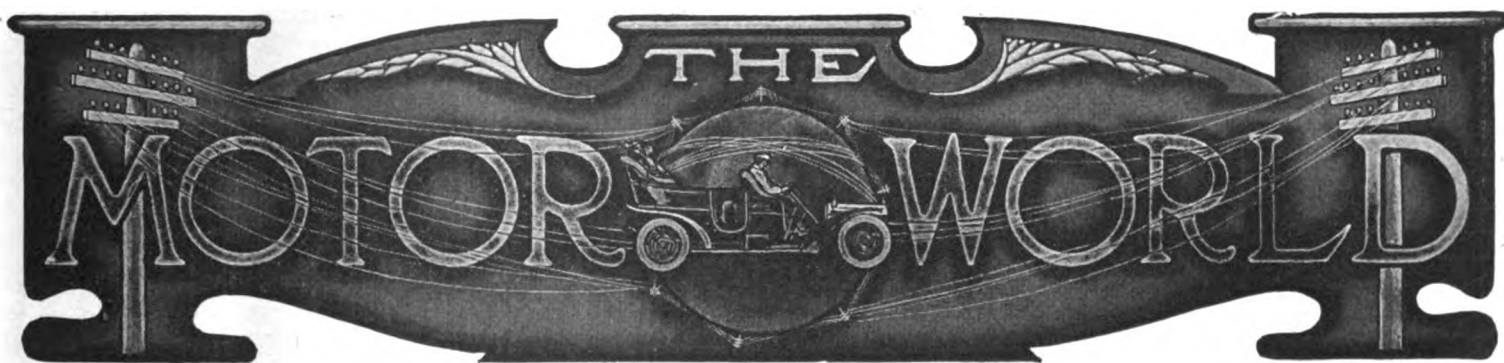
Mechanically this car is of the same simple design that has won to the Overlands immense popularity. The motor, four cylinder, four cycle, four inch bore, four and one-half inch stroke, is efficient and trouble-free. It combines speed with endurance and dependability. The cylinders are cast singly, allowing the use of a five bearing crank shaft. The bearings are made of a special alloy of anti-friction metal, used only in Overland Cars, making the motor unusually quiet and long lived. The valves are of nickel-steel and interchangeable. Owing to their particular design and large size they enable the motor to develop at least 15 per cent. more horsepower than other motors of same bore and stroke.

T H E B O D Y

There is real satisfaction in owning a car of this type. Satisfaction in knowing you will never meet a more striking looking car. It is comfortable, too; the fore doors shield you from cold in winter and dust in summer, and with top and wind shield you are prepared for all weather conditions. The color is dark blue body and cream running gear. (Overlands are noted for their beautiful and durable finish.) The upholstery is of rich black tufted leather. The dash is of mahogany. Altogether you get in this car everything you would expect in a car costing several times as much.

This is only one of twenty-two attractive Overland models for 1911. Send for our 1911 catalog describing this line.

THE WILLYS-OVERLAND COMPANY, Toledo, Ohio



CAN'T CONTROL REMOVABLE CLUTCH

Court of Appeals Affirms Lower Court's Decision Against Mabley and Franquist Patent—Detachability Not Novel.

If the last has not been heard of the Mabley and Franquist patent, No. 883,552, of March 31, 1908, which is claimed to cover removable cone clutches, it will be because its sponsors enjoy litigation and the expense thereof. After being manhandled, so to speak, by the United States Circuit Court for the Southern District of New York in the infringement suit of the Continental Automobile Co. vs. A. G. Spalding & Bros., New York agents for the Stevens-Duryea car—which employs a multiple disk clutch—the plaintiffs appealed from the adverse decision and the United States Circuit Court of Appeals, for the Second District, just has affirmed the ruling of the court below.

Judge Ray, who wrote the voluminous decision of the latter court, characterized Mabley and Franquist as "mere improvers, not pioneers," and, commenting on Mabley's testimony, declared that it "indicated that he (Mabley) was not familiar with the prior art and was ignorant of the fact that which he claims he and Franquist had done first had been done before." It was in face of this opinion that the case was appealed; and that the Court of Appeals should agree with these conclusions and agree that the patent had not been infringed seems almost a matter of course. Judges Lacombe, Coxe and Ward, who decided the appeal, nevertheless contributed a crumb of comfort to the patentees by expressing the guarded belief that "Mabley and Franquist have made improvements in reversible cone clutch mechanism which may be patentable."

"The defendant uses a multiple disk clutch," continues the court. "Both types are old and well known, both are intended to accomplish the same results and each has its advantages, but they work on es-

entially different principles. Of course it is not pretended that mere improvements entitle the party who makes them to the rewards of a pioneer inventor. There is, to say the least, a strong presumption that one using a well known multiple disk clutch will not infringe improvements intended for use upon cone clutches only. The doctrine of equivalents cannot be invoked in such circumstances."

In his decision, Judge Ray, in the lower court, found that the multiple disk clutch, well known as the Weston clutch, dates back 60 or 70 years, and, bearing on Mabley's testimony that the purpose of the invention was to provide a clutch mechanism removable as a whole without disassembling and without disturbing either the engine or transmission shafts, the court held that "there was nothing new or novel in bolting one thing to another so as to be easily removable or in attaching one end of the intermediate shaft, hollow or solid, to the transmission shaft by means of the couplings and bolts, or couplings and wedges, it is immaterial which."

HAYNES PLANT WRECKED BY FIRE.

Fire during the early afternoon of Tuesday last, 28th ult., practically destroyed the big plant of the Haynes Automobile Co., in Kokomo, Ind., causing a loss of approximately \$750,000. Two wings of the factory were utterly wrecked and the third was badly damaged, a high wind which prevailed rendering the efforts of the firemen almost unavailing. A number of completed cars were saved, however, and as the Haynes branches in New York and San Francisco are well stocked, business will not be wholly halted pending rebuilding operations which will commence at once. The fire started in the assembly room where a workman was washing a car with gasoline, which was ignited by a spark from a wire on an electric light which was being used and which short-circuited on the frame of the car. The flames spread with great rapidity and a number of employees had narrow escapes. The insurance carried approximates \$250,000.

DOW SEEKS TO PRESERVE HIS RIM

Sues to Prevent it Being Sidetracked by General Motors—Accuses Lawyer and Wants Contract Amended.

If the General Motors Co. does not advance money and otherwise put real life into the Dow Rim Co., in which it owns the controlling interest, and does not prosecute the manufacture of the Dow demountable rim it will not be the fault of Alexander Dow, who surrendered the control of the company bearing his name. In an endeavor to attain these ends and to compel the revision of the contract into which he entered Dow has instituted suit in the New York Supreme Court against W. C. Durant, the General Motors Co. and the Dow Rim Co., of which Durant is vice president, the three defendants being named as a matter of form required by equity law. In his complaint Dow also makes a serious charge against the General Motors' attorney, who had to do with the drawing of the contract.

It appears that Dow and Harry E. Gue, who also appears as a plaintiff, owned 412 shares of the Dow Rim Co.'s capital stock (\$100,000), and C. S. Mott, of Flint, Mich., 288 shares, and that Durant acquired the latter and entered into negotiations with Dow to acquire a total of 700 shares, the intention being to have the General Motors Co. hold 70 per cent. and the plaintiffs 30 per cent.; both parties were to exploit the business of the Dow Rim Co., the capital stock of which was to be increased to \$150,000 and the money for the exploitation to be advanced, as needed, by the General Motors Co. In his complaint Dow alleges that it was the intention and purpose of these negotiations that a contract should be made with Durant which later would be adopted by the General Motors Co. as the real party acting through Durant in which he was the leading spirit.

In the written draft of a contract the stipulation as to the General Motors Co.'s

responsibility for Durant's acts was omitted, Dow alleging that the company's lawyer, "one Hathaway, fraudulently and falsely stated that this agreement would be found in another clause of the contract," although as a matter of fact it did not appear. Dow, "then unlearned in the law," states that he relied on this assurance and apparently signed the contract without reading all of it and transferred 412 shares of the Dow Rim Co. to the General Motors Co. In due course the latter was requested to advance money for the needs of the Dow company, and it then repudiated any and all obligations so to do or to subscribe for any increase of the Dow capital.

The refusal was in the nature of a rude awakening to Dow, who discovered that Hathaway's alleged assurance was untrue and that the contract "did not express the true intent or meaning of the parties thereto," nor did it contain any binding obligations on the part of the General Motors Co.

Reciting that the Dow company is in need of funds and must suspend operations unless these are forthcoming, and thus render its stock worthless to the shareholders, Dow has applied to the Supreme Court for judgment requiring that the contract made with Durant in November, 1909, be amended and reformed by inserting the name General Motors Co. in place of W. C. Durant and by such additional revision as will cause it to contain the several stipulations and express the intentions of the original agreement as he outlines it. This being done, Dow asks that the General Motors Co. be "forthwith required to perform the obligations of said contract so amended."

To prosecute his case Dow has retained particularly eminent counsel, the well-known firm of Joline, Larkin & Rathbone, of New York.

To Make Stratton's Convertible Car.

The B.-O.-S.-S. Co., which last week was incorporated under the laws of Michigan, with \$250,000 capital stock, purposes engaging in the manufacture of a 35 horsepower convertible passenger and delivery car, designed by Franklin Stratton. The company expects to locate in Detroit but has not yet secured a factory. It takes its name from the initials of the four men most concerned with the enterprise, Frank A. Bowen, John A. Olson, Frank A. Smith and Franklin Stratton.

St. Louis Dealers Sue for \$178,500.

Alleging that the Waverley Co., of Indianapolis, had broken its contract, the Pope-Hartford Motor Car Co., of St. Louis, Mo., has instituted suit for \$178,500; to assist in enforcing its claim it attached the Waverley exhibit at the recent show in St. Louis. In its petition the Pope-Hartford company alleges that on March 11, 1910, it contracted for the Waverley agency

for a period of five years, agreeing to take a specified number of cars each year, and that it remodeled its garage in order to enable it properly to handle electric cars. Because of the alleged failure of the Waverley company to abide by the contract, the St. Louis concern figures that it has lost five years' profits to the amount of \$162,500, which it seeks to obtain; it also believes that it should be paid the \$16,000 which it expended in remodeling its garage and it is to recover these amounts that it has entered suit.

C. G. V. Importers Forced to the Wall.

Following the filing of a petition in bankruptcy by three creditors, Jesse Watson was, on Saturday last, 25th ult., appointed receiver for the C. G. V. Import Co., doing business at 49 West Sixty-fourth street, New York, where it handled the French C. G. V. car. The petitioning creditors were John C. Carley, \$15,255 on assigned claims for money lent to the company and its predecessor by Emile Voigt; Thomas Gallagher, \$35, and Rene Berrue, \$97. It was alleged that the company was insolvent and had transferred part of its property to creditors to prefer them. The business was started in 1904, was carried on by a New Jersey corporation of the same name until November 9, 1907, when the New York corporation was formed, with capital stock \$120,000. Emile Voigt was president and treasurer.

Indianans "Sic" Law on Site-Seekers.

If the Universal Motor Co., of Denver, Col., which has built a truck of original design, wants a factory site in the East there are residents of Newcastle, Ind., who are so anxious to know why it so long has overlooked Newcastle that they have asked the county attorney to look into the matter. These residents allege that nearly a year ago representatives of the Universal company induced them to subscribe for stock to the value of \$30,000, in return for which the Universal factory was to be established in Newcastle within ninety days. The ninety days expired last August, but the factory is still unbuilt, and all the Newcastle men have to show for their money is a collection of stock certificates, hence the appeal to the prosecuting attorney.

American Distributing Enlarges Its Sphere.

On the 1st inst. the American Distributing Co., of Jackson, Mich., closed its office in the Ford building in Detroit and removed to more commodious quarters at 1003 Woodward avenue, where a show room also will be maintained. The exhibits will include the several products for which the American company has the sales agency—those of the Lewis Spring and Axle Co., Hayes Wheel Co., America Gear & Mfg. Co., Muzzy & Lyon, Kinsler & Bennett and the Westinghouse Electric & Mfg. Co. Apparatus for testing springs and axles

and other things will be a feature of the new show room.

Grossman Appeals from Rajah Decision.

The Emil Grossman Co., of New York, has filed notice of an appeal from the decision of the United States Circuit Court in New York adjudging it guilty of having infringed the E. J. Mills patent, No. 825,856, covering the Rajah spark plug. Judge Hazel, who rendered the decision, has granted also a writ of supersedeas, which stays injunction or other proceedings until the appeal is heard and which requires the Grossman company to give a bond for \$3,000 and to file a sworn statement each month of the number of spark plugs it may sell and giving the names of the purchasers.

Weed-Willis Case Still on Calendar.

Pending the decision of the Weed Tire Chain Grip Co.'s petition to the United States Circuit Court in Chicago for a rehearing of its case against the Excelsior Supply Co., which resulted adversely to the patent, the Weed company's suit against the E. J. Willis Co., of New York, for infringement of the Parsons patent, remains on the calendar of the United States Circuit Court in New York. It has been called twice, but at the request of the Weed counsel no specific date will be set for argument until the Chicago matter finally is settled.

Detroit Money Rescues Canadian Bankrupt.

The assets of the Dominion Motors Co., of Walkerville, Ont., which recently went into involuntary liquidation, have been purchased by Enoch Smith, of Detroit, acting for Detroit and Windsor (Ont.) interests. It is the intention to reorganize the company and to continue the operation of the plant.

Chicago Top Company in Trouble.

F. M. McKey was appointed receiver for the Chicago Auto Top Co. on Thursday last, 23d inst., and has taken charge of the concern's property at 1507 Michigan avenue, Chicago. The assets consist chiefly of stock and tools, open accounts and one automobile, their value not being stated.

Only One of Welch Cars Discontinued.

According to advices from General Motors' sources, the manufacture of the Welch car has not been wholly discontinued, as was announced several weeks ago. It is only the Welch-Pontiac that has been dropped; the Welch-Detroit will be continued.

New Departure Increases to \$5,000,000.

The New Departure Mfg. Co., of Bristol, Conn., maker of the New Departure bearings, among other things, has increased its capital to \$5,000,000. Previously it stood at \$1,500,000.

STUDEBAKER ISSUE SNAPPED UP

**Preferred Stock to Value of \$13,500,000
Oversubscribed Within 48 Hours—Further
Details of Merger.**

Further details of the organization of the new Studebaker Corporation were made public early during the present week, when a public offering of the \$13,500,000 7 per cent. cumulative preferred stock at par was made by Lehman Bros. and Goldman, Sachs & Co., of New York, and Kleinwort Sons & Co., of London, who purchased preferred stock to that amount. Within 48 hours after the stock was offered, it is stated that it was "very heavily oversubscribed."

The new corporation has an authorized capital stock of \$15,000,000 preferred, of which \$1,500,000 will be retained in the treasury and \$13,500,000 issued. It also has \$30,000,000 common stock, most if not all of which it is understood will be held by the Studebaker interests.

The preferred stock carries with it many restrictions concerning the financial operations of the company. The company, for one thing, has no power to mortgage or encumber any of its property or assets except with the consent of 75 per cent. of both the preferred and common stock outstanding, and at its inception the preferred stock constitutes a prior lien on the corporation's assets. In addition to providing that the preferred stock shall be cumulative as to dividends to the extent of 7 per cent. a year's provision is also made for the creation of a "special surplus account" out of the net profits of the company each year, beginning with July 1, 1912.

This surplus account shall be an amount equal to at least 3 per cent. of the preferred stock issued and outstanding, to be set apart from the net profits after preferred dividend requirements are covered. The special surplus account shall be applied to the purchase of the preferred stock, which is redeemable at the option of the company on three months notice at 125 and accrued dividends, but the company may buy in the preferred shares for the purpose of redemption at a lower price than this if they can be obtained. Such stock shall not be reissued by the company, but shall be canceled from time to time.

In no event shall any dividend be paid on the common stock until there shall have been accumulated at least \$1,000,000 to the credit of the special surplus account, and not more than 6 per cent. shall be paid on the common stock in any one year until the special surplus account has been increased to at least \$2,500,000, this account to be either in the form of cash or its equivalent or of preferred stock theretofore acquired by the company. The preferred stock shall

not be increased without the assent of 75 per cent. outstanding. Application will be made to list the preferred shares upon the New York, Chicago and Amsterdam Stock Exchanges.

According to the report submitted by public accountants appointed to examine the finances of the Studebaker Bros. Manufacturing Co. the average net profits of that company for the ten years ended December 31, 1910, were \$1,067,484 per annum, and for the five years ended December 31, 1910, \$1,067,659. The combined profits of the Studebaker Bros. Manufacturing Co. and of the E-M-F Co.—which the Studebaker corporation has taken over—for the year 1910 were \$2,474,629, and for the year 1909 \$2,124,586. It is estimated that the net profits of the two companies during the present year will reach at least \$3,500,000. During 1910 the Studebaker company shipped 107,000 horse-drawn vehicles, of which 60,000 were farm wagons, and up to December 31st last the E-M-F Co. had marketed 23,000 automobiles.

The initial balance sheet of the Studebaker Corporation, the new company, covering assets and liabilities as of January 1 of the concerns to be taken over follows:

Assets—Trade name, good will, patents, etc., \$19,807,277; real estate, building, machinery and equipment, \$9,811,990; investments in other companies, \$742,513; inventories of raw materials, work in progress, finished products, etc., \$14,643,420; accounts and notes receivable, \$5,253,955; sundry debtors, \$313,022; deferred charges to operations, including insurance and unexpired discount, \$251,359; cash in bank and on hand, \$6,243,620. Total, \$57,067,156.

Liabilities—Preferred stock, \$13,500,000; common stock, \$30,000,000; minority stockholders' interests in stocks of subsidiary companies, \$29,100; notes payable, \$10,257,237; deposits received on contracts for sales of automobiles, \$445,244; accounts payable, \$2,641,769; sundry reserves, \$193,806. Total, \$57,067,156.

Velie Takes Up Truck Manufacture.

Commercial vehicles have been added to the productions of the Velie Motor Vehicle Co., of Moline, Ill. The first of them, a ton and a half and a three ton truck, are due to make their appearance during the present month.

Firestone Goes to the Pacific Coast.

R. J. Firestone, sales manager of the Firestone Tire & Rubber Co., has departed for an extended business trip to the Pacific Coast. En route he will visit all of the more important cities.

Dowse Resigns G & J Presidency.

B. C. Dowse, president of the G & J Tire Co., of Indianapolis, Ind., has resigned that office. His resignation becomes effective on the 10th inst.

RUBBER ONCE MORE GOES SOARING

**Price Takes a Spectacular Upward Jump—
Syndicate Manipulation and Other
Causes Held Responsible.**

Rubber buyers are represented as being in a state of some apprehension over a reported "corner" in the primary market, the only tangible evidences of which thus far are an upward tendency in the ever-sensitive New York market and renewed activity in rubber securities in London. The real cause for uneasiness lies in the supposed conditions in the Para district where a well-formulated movement is said to be under way involving the accumulation already of 2,450 tons of rubber by a syndicate operating in connection with banking interests. But whether an ordinary market operation is in progress or whether, as has been intimated, the Brazilian government is interested in the movement and has in view a project akin to the "valorization" of coffee, remains to be determined.

Attention has been drawn to the stories of syndicate operations by the recent movement of the local market. Following a gradual and protracted decline from the high-water mark of \$2.95 last April, a turning point was reached on January 19 of this year, when the quotation on upriver fine Para was \$1.13. By the end of the month it had reached \$1.25, and it has since continued to soar, the increase during the week of February 17-24 amounting to 18 points—said to be the most spectacular advance on record. The quotation on March 1 was \$1.66-\$1.68. Furthermore the shipments of rubber from Para for the past seven months and the corresponding period of a year ago reveal a falling off of 2,850 tons, while the receipts of the United States are over 9,000 tons short on the same basis. In addition to the amount withheld at Para 2,500 tons are said to be stored in Europe.

While the "valorization" report has not been verified, it is known that something in the nature of a syndicate agreement was arranged last fall between the "aviadores" and "seringueiros," or commissioners and gatherers of the rubber, respectively, at Para and Manaos, to store and hold rubber at the ports in order to control the price. It has been stated that the banks which are aiding the movement, among which have been mentioned the Bank of Brazil, a government institution, and the Banco Constructor e Agicola of San Paulo, have received specific instructions to make loans both on stocks in hand and future arrivals at 9 per cent. Receivers who turn their stocks into the pool draw 75 per cent. against the receipts in advance and participate in any profits, while those who refuse to enter the syndicate have their stocks bought up at market rates.

IN THE RETAIL WORLD.

Thomas Boardman, of Tomahawk, Wis., is preparing to open a garage in that town.

Harry Blakeslee and Francis Norris have opened a garage in Thomastown, Conn.

A new garage is being built on Crawford's Hill, West Conshohocken, Pa., by Edward Harrison.

Hackett & Wickham is the style of a new firm which has opened a garage in Skowhegan, Me.

Sam Foster, who operated a garage in Beloit, Wis., has sold his business to Bert Allen, of the same town.

John J. Penhallegon has embarked in the automobile business in Mineral Point, Wis. He has the Elmore agency for three counties.

Frank Gardiner, of New York City, has purchased the garage and salesroom of Theodore Randolph, Rockville Center, N. Y.

The new electric garage of the Electrical Maintenance Co., at 264-266 Halsey street, Newark, N. J., was opened on March 1.

At a cost of \$5,000 C. F. Blumberg is erecting a garage on Austin street, Seguin, Tex.; it is of concrete blocks and stone, 60 x 80 feet.

The Reo Motor Car Co., has opened a branch in Cleveland under the management of Edward DeGollier. It is located on Euclid avenue.

The J. I. Case Co., of Racine, Wis., has established a branch in Indianapolis, at 514 North Capitol avenue. It is in charge of E. D. Dormer.

Axel A. Olsen has purchased the plot, 312-314 West Fifty-ninth street, New York City, and will erect thereon an eight-story fireproof garage.

F. I. Flanagan has opened a garage and repair shop at 211 South Church street, Rockford, Ill. He will carry a full line of accessories and supplies.

William Snively, formerly with the Buick factory, has opened a garage at 238-240 South Market street, Wichita, Kan. He will handle the Buick line.

F. S. Duesenberg, of Waterloo, Ia., has purchased an interest in the Sears Auto Co., of Des Moines, Ia. He is the designer of the Maytag-Mason car.

Webb & Pedlow is the style of a new firm formed in Cleveland to handle Jackson cars in that Ohio city. Salesrooms have been established at 2158 East Ninth street.

Work has been started upon the garage of the National Auto Co., Chambersburg, Pa. It is located on Market street and will be two stories high, with full concrete basement.

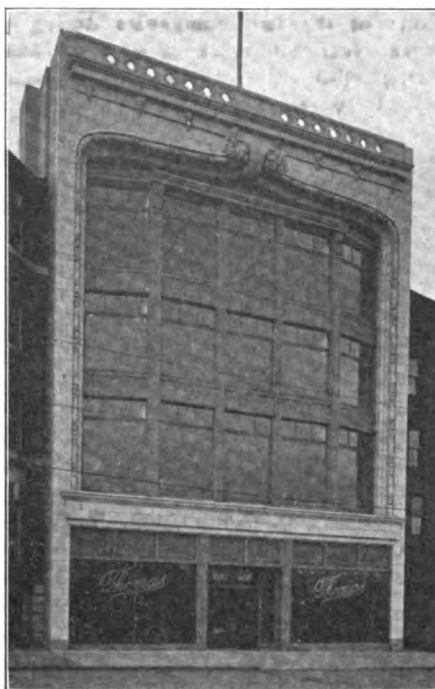
Under the style the Motor Trucking Co., a concern has been organized in Tarry-

town, N. Y., by James H. Wallach. The company will do a general hauling business in Westchester county.

William Ward, formerly of the Law Automobile Co., La Crosse, Wis., has established a garage and livery service on North Third street in the same town. He will handle MacFarlan "Sixes."

H. J. Clark, of Des Moines, Iowa, has taken the agency for Havers cars and opened salesrooms on South Fifth street. The Havers car is a newcomer, manufactured in Port Huron, Mich.

George Fournier has purchased an interest in the Greenfield Auto Co., on Federal street, Greenfield, Mass. H. Wilson



NEW THOMAS BRANCH IN BOSTON
915-921 Boylston Street

remains manager, while Fournier takes charge of the repair department.

The Louisville Automobile Supply Co. on March 1 opened a salesroom at 648 South Fourth street of that Kentucky town. J. A. Serpelle and J. G. Walden are the men behind the enterprise.

Meier Bros., of Madison, Wis., are building a garage on East Main street, where they will display Pullman cars. The structure will be 100 x 30 feet, two stories high, with cement floors and steel ceilings.

Clarence S. Payne has taken the Hartford (Conn.) agency for Palmer-Singer cars, with salesrooms at the Hansen garage, 356 Main street. He formerly was with the Hartford Rubber Works Co.

George A. Haws, manufacturer of Panhard oils and greases, has inaugurated a New England branch at 899 Boylston street, Boston. It is in charge of A. H.

McIntyre, who is well known to the trade in that part of the country.

The Firestone Tire & Rubber Co. has added Omaha to its long list of branches. Its store there, which was opened on the 1st inst., is located at 2127 Farnam street and is in charge of George M. Martin.

A. G. Spalding & Bros., New York agents for Stevens-Duryea cars, finally are about to line-up in "automobile row," having leased the premises 1873 Broadway. For many years they have flocked by themselves on West 42d street.

Schedules in bankruptcy of the City Garage, Inc., of White Plains, N. Y., against which a petition had been filed three weeks ago, show liabilities of \$5,049 and assets \$4,720, consisting of fixtures and supplies, \$2,000; accounts, \$2,705, and cash, \$15.

The Craig Auto Co., distributor for Abbott-Detroit cars, at 465 Woodward avenue, Detroit, Mich., has changed its name to Abbott-Detroit Motor Sales Co., and incorporated under that name. "Bud" Moran will remain in charge of the salesrooms.

The Grimes-Gray Auto Co. has commenced business in Kirkpatrick, Ind., handling the Overland, Stoddard-Dayton and Empire cars. Both Grimes and Gray are experienced automobile men and theirs is the first establishment of the sort in the town.

Incorporated under the laws of Michigan the Oswald Motor Car & Supply Co., of Grand Rapids, Mich., has taken over the business of the Oswald Automobile Co., C. J. Oswald becoming president, and E. G. Winchester, secretary and treasurer of the new company. Kissel pleasure and commercial cars, Baker electrics and Federal trucks will be handled, and accessories and supplies be dealt in.

A petition in involuntary bankruptcy has been filed against the Cincinnati Auto Livery, Co., Cincinnati, Ohio, by Robert I. Channer, who holds a judgment for \$1,000 against the company. Bernard C. Bowen was appointed receiver with a bond of \$1,000. The judgment is the outcome of an accident, in which Channer sustained injuries by a collision of the rig in which he was riding, with one of the automobiles of the Livery company.

The Abbott-Detroit Motor Co., capitalized at \$30,000, has been incorporated under the laws of New Jersey to aggressively exploit the Abbott-Detroit car in the metropolitan district. Its officers are: L. A. Hopkins, president; W. M. Botto, vice-president, and Julius Hocke, secretary and treasurer. Quarters have been leased in New York at 1670 Broadway, corner of 52d street, and as Hopkins and Botto are well known trade veterans and Hocke is president of the City Bank, of Bayonne, N. J., and a director in several other financial institutions, nothing is lacking for the aggressive campaign which will be pursued.

THE WEEK'S INCORPORATIONS.

Austin, Texas.—Brush Motor Co., a New Jersey corporation admitted to do business in the state of Texas. Capital in Texas, \$10,000.

Dover, Del.—Merchants' Motor Transit Co., under Delaware laws, with \$500,000 capital; to deal in automobiles, motorcycles, motor trucks.

Cincinnati, Ohio.—Gilchrist Motor Sales Co., under Ohio laws, with \$18,000 capital; to deal in motor vehicles. Corporators—J. K. Gilchrist, H. Burkhart, A. Peters.

Dallas, Tex.—Times Square Automobile Co., under Texas laws, with \$5,000 capital; to deal in motor vehicles. Corporators—M. Froelich, W. D. Tuff, Geo. G. Levy.

Kansas City, Mo.—Rahe & Bennett Automobile School Co., under Missouri laws, with \$2,000 capital. Corporators—H. J. Rahe, C. J. Rahe, C. S. Bennett and others.

Ogden, Utah.—Motor Sales & Garage Co., under Utah laws, with \$12,000 capital; to deal in automobiles. Corporators—R. M. Austin, A. S. Meserve, F. L. Voorhees.

Norwalk, Ohio.—Fisher Auto Top Co., under Ohio laws, with \$10,000 capital; to manufacture automobile tops. Corporators—William A., Laura A., Lawrence and Martin Fisher.

Carthage, Mo.—Lanphere Carriage & Auto Co., under Missouri laws, with \$15,000 capital; to deal in automobiles. Corporators—E. R. Lanphere, N. E. Lanphere, Thomas Hackney.

Chicago, Ill.—Universal Auto Sales Co., under Illinois laws, with \$10,000 capital; to deal in automobiles. Corporators—Charles N. Henry, Addison B. Hodges, Charles P. Doolittle.

Meriden, Conn.—Penfield Shock Absorber Co., under Connecticut laws, with \$25,000 capital; to manufacture shock absorbers. Corporators—William A. Penfield, Charles L. Penfield.

Stafford, Conn.—Hudson Motor Car & Garage Co., under Connecticut laws, with \$3,000 capital; to deal in automobiles. Corporators—Washington D. Graves, Norman A. Gold, Alonzo M. Graves, Robert H. Fisk.

Burlington, Wis.—Raymond C. Agner Co., under Wisconsin laws, with \$30,000 capital; to manufacture and sell automobile oil and grease guns. Corporators—Raymond C. Agner, Hugh Agner, Edward Brook.

Dayton, Ohio.—Auto Truck Sales Co., under Ohio laws, with \$10,000 capital; to deal in motor trucks. Corporators—Charles E. Wagner, Howard C. Black, and Robert P., Adolph L., Joseph A. Wortmann.

Indianapolis, Ind.—Auto Specialty Mfg. Co., under Indiana laws, with \$10,000 capital; to manufacture automobile parts.

Corporators—A. T. Pursell, M. V. Wiggins, G. W. Dollardhide, F. E. Floyd, J. L. Floyd.

Keystone, W. Va.—McDowell County Automobile Co., under West Virginia laws, with \$5,000 capital; to manufacture automobiles. Corporators—J. K. F. Steele, I. L. Shor, H. B. Reynold, F. T. Hutson, F. B. Steele.

New York City, N. Y.—Bryant Motor Service Co., under New York laws, with \$500 capital. Corporators—J. H. Scott, 1 West 100th street; C. Smith, 65 Prospect place; H. A. Bortz, 163d street and South-ern boulevard.

Washington Court House, Ohio.—Swope Garage & Machine Co., under Ohio laws, with \$10,000 capital; to maintain a garage and repair shop. Corporators—George B. Swope, Elmer Jank, P. F. Oetman, C. J. Lawrence, J. E. McLean.

Cleveland, Ohio.—Wissman Auto Repair Co., under Ohio laws, with \$5,000 capital; to manufacture and deal in motor vehicles. Corporators—Joseph H. Wissman, Anna Wissman, Nettie L. Cermak, William J. Cermak, Joseph C. Kocian.

Cincinnati, Ohio.—Auto-Spring Wheel Co., under Ohio laws, with \$10,000 capital; to manufacture under letters patent resilient wheels for automobiles. Corporators—Alfred J. Swing, G. F. Ahrens, William L. Kellogg, John C. Hermann.

Brooklyn, N. Y.—Duplex Magneto & Spark Plug Co., under New York laws, with \$10,000 capital. Corporators—Carl Messerschmidt, 696 Bergen street; Edward Schell, 575 Fifth street; Kurt L. Elsner, 882 Union street, all of Brooklyn, N. Y.

Elkins, W. Va.—Clark Gear Co., under West Virginia laws, with \$20,000 capital; to manufacture automobile reverse gear under letters patent, and other gears for automobiles. Corporators—P. E. Clark, Mary Clark, R. Chaffey, all of Elkins, and others.

Detroit, Mich.—Kinsey Motor Co., under Michigan laws, with \$150,000 capital; to manufacture automobiles. Corporators—S. W. Kinsey, Thomas Mottaram, A. G. Schlee, E. H. Ziegler, F. T. McGlinnon, R. D. Richards, W. H. Graham and F. A. Gies.

Detroit, Mich.—Detroit Wheel Co., under Michigan laws, with \$1,000,000; to manufacture spring wheels. Corporators—Charles R. Chisholm, A. W. Wier, Frederick A. Sweitzer, all of Detroit, and N. B. Smith and Raymond T. Sewell, of Boston, Mass.

Dayton, Ohio.—Geyer Sales Co., under Ohio laws, with \$75,000 capital; to manufacture and deal in automobiles and supplies and aeroplanes and accessories. Corporators—Carl F. Geyer, Frank C. Vail, J. Carl Horton, Harry S. Snyder, F. S. Carnes.

Los Angeles, Cal.—Pneumatic Clutch Motor Co., under California laws, with

\$250,000 capital, of which \$70 has been subscribed. Corporators—E. W. Murphy, J. G. Wartmann, C. M. Gair, J. H. DeLaMonte, E. Wilson, S. T. Kelsey, Albert Lee Stephens.

Buffalo, N. Y.—Denniston Co., under New York laws, with \$150,000 capital; to take over the business of the E. E. Denniston Co., manufacturers of automobiles, motors and engines. Corporators—Ernest E. Anderson, Frank C. Brown, Clyde R. Sikes, Abundius Gravel.

Toledo, Ohio.—Warner Motor Co., under Ohio laws, with \$10,000 capital; to take over the business of the Warner Mfg. Co., a private concern. Corporators—Thomas W. Warner, W. Rexford, E. Stanton Janney, Louis S. Stewart, Frank G. Burt, George D. Moore.

Athens, Ga.—Athens Motor Car Co., under Georgia laws, with \$10,000 capital and privilege to increase this to \$50,000; to manufacture and deal in all kinds of motor vehicles, supplies and accessories. Corporators—Walter H. Bishop, Lucien B. Flatow, both of Athens.

New York City, N. Y.—Frederick A. Smith, Inc., under New York laws, with \$25,000 capital; to manufacture and deal in automobiles and supplies. Corporators—Frederick A. Smith, 230 W. 58th street; Albert Rosen, 1258 Broadway; Moses Wolf, 9 Maiden Lane; all of New York City.

Elizabeth, N. J.—New Jersey Motor Equipment Co., under New Jersey laws, with \$100,000 capital; to acquire certain patents and manufacture automobile appliances under letters patent. Corporators—George Seeber, Richmond, N. Y.; Edward Nugent and Ludwig Hoffman, of Elizabeth, N. J.

New York City, N. Y.—Plaza Motor Renting Co., under New York laws, with \$5,000 capital; to maintain an automobile livery service. Corporators—George Lambert, 475 Monroe street, Brooklyn; Sidney L. Rowland, 40 Vernon avenue, Brooklyn; Elon B. Nobles, 232 West 76th street, New York City.

Harpers Ferry, Ohio.—Trackless Trolley Co., under Ohio laws, with \$100,000 capital; to manufacture automobiles and other motor vehicles. Corporators—Loren N. Downs, of New York; M. Louise Montague and H. H. Emmert, of Martinsburg; Hugh L. Kirby, of Harpers Ferry; Oscar D. Bowers, of Hagerstown, Md.

Increases in Capital.

Milwaukee, Wis.—Cutler Mfg. Co., from \$1,800,000 to \$2,000,000.

Chicago, Ill.—Morrison Motor Car Co., from \$20,000 to \$50,000.

Bristol, Conn.—New Departure Mfg. Co., from \$1,500,000 to \$5,000,000.

Jackson, Mich.—Clarke-Carter Automobile Co., from \$100,000 to \$250,000.

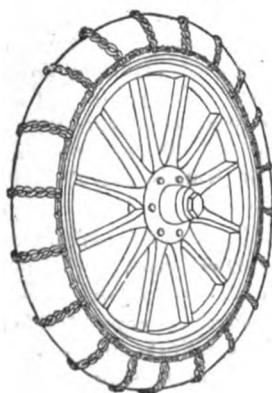


Don't Swear at the Road !

Even if snow, ice or sleet have made it almost impassable and full of ruts;
Even if heavy rains have fallen, softening and churning up the mud;
Even if the Asphalt, Creosote Block or Macadam Pavement is slippery and uncertain.

When you have **Weed Chains** on your wheels you can run along with perfect confidence, knowing well that this simple, efficient, time-tried, never failing device will prevent skidding and slipping absolutely.

Only foolish, inexperienced drivers dare leave the garage without **Weed Chains**.



Weed Anti-Skid Chains

(With the "Creeping Grip")

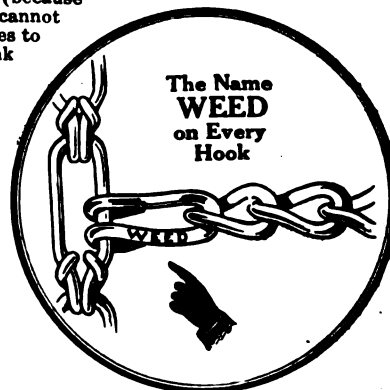
are a necessity, not merely a convenience. No one should leave the garage without a full equipment of Weed Chains. "As necessary as gasoline." Not an experiment. The perfected result of years of mechanical engineering, expensive tests and practical experience. All kinds of roads look alike to the car that carries **Weed Chains**—deep ruts, slippery pavements, heavy sand; it's all the same—a **start** with **Weed Chains** means a **finish**.

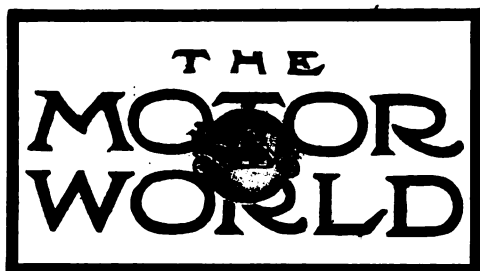
Do not Injure Tires Weed Anti-Skid Chains (because of the "Creeping Grip") cannot injure tires; they actually preserve them. They are made in sizes to fit every tire, so be sure to get the right size. Too heavy a link will ruin a small tire. Tire preservation means money and worry saved. Your dealer knows. Many Manufacturers will not guarantee a tire unless a Weed Chain is used with it.

Every reputable dealer in every part of the country carries repair parts which are interchangeable on any and every Weed Chain. If your dealer happens to be out of them for the moment, send us his name and we will see that you are supplied immediately. The name **Weed** on every connecting hook. Cross Chains all brass plated; every link electrically welded and highly tempered; almost as smooth as glass and as hard as a diamond without being brittle.

No Trouble to Put On —you don't need a jack—and the little bundles that they make in their canvas bags take scarcely any room. Weed Chains are the only successful anti-skid devices, which are guaranteed to the limit by a responsible manufacturer. They save the tires and, because they're reversible, they save themselves—**two chains in one**. A chain on each rear wheel is car and passenger insurance, and if you want to know what **real steering** steadiness means, put them on your front wheels too. **Weed Anti-Skid Chains increase your brake power.**

WEED CHAIN TIRE GRIP CO. 28 Moore Street NEW YORK CITY





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Should Be Addressed to P. O. Box 649.

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NEW YORK, MARCH 2, 1911.

"We are today in receipt of an inquiry from St. Petersburg, Russia, same being clipped from the Motor World. We are enclosing this just as we received it, and wish to compliment you on the wide circulation of the Motor World."—Colby Motor Co., Mason City, Ia.

Displacing the Pneumatic Tire.

It is nothing short of remarkable how great and unrelenting is the effort to displace the pneumatic tire. It was not long after the first tire was applied to a bicycle twenty-odd years ago that the effort began and it has never ceased. The spring wheels, spring hubs and spring tires that have been evolved as substitutes would in themselves constitute a formidable exposition—an exposition of faith and of misdirected and unprofitable genius.

According to Washington advices no less than 13,000 patents on such devices clutter the records of the Patent Office,

where they now are viewed as close kins to the perpetual motion machine and the non-refillable bottle. But not even these 13,000 failures serve to discourage dreams of world conquests and countless riches. The man with a spring tire or a spring wheel in his brain always can see "millions in it." Modest profits never are within his vision. His faith in his invention surpasses understanding and is so great and so intense as to compel admiration.

When he is able to imbue others with at least a share of it and the inevitable company is organized to manufacture his invention, it is capitalized for huge sums; anything less than a quarter million is a mere bagatelle. The colossal fortunes that grew out of the once despised patents on the sewing machine and the telephone usually are pointed to as instancing the entrancing possibilities offered by investment in each particular collection of steel springs that is destined to put the pneumatic tire "out of business" and save all the punctures and worry and work and expense they entail.

During the past six months, as is periodically the case, there have been revivals of faith in such devices and a half dozen or more companies have been formed with authority to issue mountains of stock certificates, on the sale of which the erection of factories and the actual production of the goods always depends.

It all is very remarkable—the earnestness, the enthusiasm, the faith that is generated. For it requires intense earnestness to imagine that it is possible to find a substitute for air, or anything even mildly suggestive of its elasticity, and it requires practically unbounded enthusiasm and faith to accept one chance in 13,000 and to proceed in the face of 13,000 failures. But it is an ill wind that blows nobody good and the long effort to put the pneumatic tire out of business has at least profited the patent attorneys.

Opportunity for Demountable Tops.

Has anybody seen the modernized version of the old "balloon" top, about which so much was heard some six or seven years ago? That particular style appeared in the days when it was sought to develop the "regular family horse" type of vehicle for practical use; it was in the days of the folding tonneau. But it had this in its favor, considered as a principle rather than

a work of art, that it provided the comforts of the closed car for winter use and the convenience and healthfulness of the open car when the elements sanctioned the removal of the upper section. It was not beautiful, but that has nothing to do with the present question.

This is the day of the enclosed car; coupes and inside-driven limousines—"in-driving motors" they are punctiliously termed in England—are rapidly growing in favor, not in point of their luxury necessarily, but because of their real advantages. Also this is the day of the closed-front body with straight-line sides, square dash and substantial coachwork.

The inference is plain. The objections of wobbliness and ungainly lines that checked the development of the early demountable top are lacking in the present body fashions. Shapely design and solid construction are perfectly possible and may be combined in a body that will look equally well either with or without the top. Something of the sort probably would find a ready market, the need is approached in the landaulet, but not exactly attained—the interior of that style of body is too gloomy. What the man who garages his own car wants is neither this nor a two-body equipment; one is not quite satisfactory and the other is too cumbersome. What he really wants is a solid, glazed top that can be used interchangeably with the cape hood. The apparent need for such a design has been noted before, but, oddly enough, it has not yet come to light.

The Trend Toward Heavy Trucks.

It remains for some bright young man with a penchant for figures to calculate the most economical size of commercial vehicle to be used under average conditions. That is to say, someone will announce sooner or later that it is more economical to haul five tons of merchandise over a given route in a single load with a five ton vehicle, in two loads with a machine rated at two tons and a half, or in five loads with one ton vehicles. As to the point involved, it is likely that certain very definite ideas are entertained by engineers at the present time; certainly, manufacturers are known to have no uncertain views on the subject, but the absolute and convincing mathematical proof is lacking.

All of which opens the way to the consideration of a very vital point in motor

truck operation. As has been pointed out several times, the difference in manufacturing cost between automobiles of similar design but of different sizes or capacities is not as great as might be supposed. Labor costs are about the same, the time consumed in machining parts of a given form does not increase in direct proportion to their dimensions, no more time is required to assemble and test a large chassis than a small one, "overheads" therefore are about the same for any given design. The chief difference is in the cost of material, which, averaged over the entire machine, is really less than the uninitiated would be inclined to believe.

Such being the case, the conscientious manufacturer is inclined to produce a fairly large machine, since he can secure a market for it at a price which gives him ample leeway for good material and workmanship. His only other alternative is that of producing in huge quantities with the incidental difficulties of developing a proportionately large demand. But the nub of the matter is that the truck user with large quantities of material to be handled will be inclined to verge toward the heavy vehicle rather than toward the light one, merely as a means of reducing the ratio of idle mileage to tonnage hauled. Thus, pending the adjustment of the question of maximum capacity for minimum operating expense, it may be said that there is a double tendency in the direction of heavier, rather than lighter, vehicles; that is, insofar as miscellaneous trucking or "transfer" work is concerned.

Already one New York concern is using a fleet of ten 10-ton coal trucks, while 5-ton trucks are exceedingly common. The limit thus far achieved is in a 20-ton truck, the axle equipment for which was exhibited at the recent Chicago show. That the future will see wonderful things in the way of such "big stuff," as the runabout salesman scornfully would term it, is practically assured.

An Englishman, who had been viewing in amazement the structural "Jumbo" characteristics of some of the American products, expressed some doubt as to their probable durability. "Granted this proviso, that they will stand up in use," he said, "the next problem is to construct a road that will stand them. If builders and users impose thus upon the good nature of road authorities, there will come a day of reckoning when legislation of a prohib-

itive nature is apt to hit the user rather heavily."

The Removal of Some Doubts.

Apparently because question had arisen, The Automobile has kindly taken the world into its confidence and explained just what manner of publication it is: It is an "educational magazine." In the interest of art, science and literature and to assist in removing doubts, the Motor World is pleased to assist its contemporary in spreading the information. It explains many things. It explains, for instance, the pictures of human skeletons and battlefields and the dainty little "Dotty Dialogues" which The Automobile spreads on its pages. These "dialogues" are so highly educational that we offer no apology for extracting from one of them and reproducing it on another page. The trade cannot well fail to fall in love with "Sweetheart" and "Hubby, dear," and their biscuits. It is a surpassing effort on the part of "writers of great engineering skill." Our contemporary desires it known, too, that it is one of those educational mediums, "the purity of which is not contaminated by statements founded on less than 100 per cent. of truth," which remark evidently is designed to explain the delicate tracings of moss which so often characterize its matter. Recalling the recent and greatest "scoop" of its career—the "news" that one of the big and important automobile manufacturers had "failed" and "gone under," which was only 99.9 per cent. untrue—and not to mention its glorious reports of automobile shows written long before the doors of the show buildings were opened, it may not be unfair to suggest that The Automobile should revise its percentage or hold fast to "Dotty Dialogues," which require merely great engineering skill. It is, nevertheless, to be felicitated on its tardy publication of the annual report of the president of the Motor and Accessory Manufacturers, which he delivered and which the Motor World printed more than a month ago. In its pursuit of "100 per cent. truth," our contemporary apparently has finally succeeded in learning that the official in question actually signed and delivered the address.

Perhaps the Federal registration bill is an unconstitutional interference with states rights, but when any state in the Union dares close its roads to law abiding citizens of any other state or to interrupt or

COMING EVENTS

February 25-March 4, Toronto, Canada—Annual show under auspices of Ontario Motor League.

February 27-March 4, Kansas City, Mo.—Fifth annual show of Kansas City Automobile Dealers' Association.

February 27-March 4, Sioux City, Ia.—Automobile Dealers' Association's annual show.

March 4-5, Shreveport, La.—Two days racemeet on fair grounds track.

March 4-5, Oakland, Cal.—Opening race-meet on Oakland motordrome.

March 4-11, San Francisco, Cal.—San Francisco Motor Club's show in Dreamland and Pavilion rinks.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building and Horticultural Hall.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

March 6-11, Houston, Tex.—Houston Automobile Dealers' Association's endurance run to San Antonio via Austin, and return.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

March 11-18, Cleveland, O.—Manufacturers and Dealers' Association's show in Central Armory.

March 14-18, Denver, Col.—Annual Show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 15-18, Louisville, Ky.—Louisville Automobile Dealers' Association's annual show in First Regiment Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

March 20-25, Youngstown, O.—Youngstown Automobile Club's show in Auditorium rink.

March 22-25, Watertown, N. Y.—Watertown Dealers and Manufacturers' Association's second annual show in armory.

March 25-April 1, Pittsburg, Pa.—Pittsburg Automobile Dealers' Association's fifth annual show in Duquesne Garden.

March 27-30, Jacksonville, Fla.—Racemeet on Atlantic-Pablo Beach.

impede their freedom of travel by the institution of an "admission fee" of whatever term, it is time that Congress made such Federal interference constitutional. Liberty and the pursuit of happiness and the very title United States become mere mockeries when such practices are countenanced.

NATIONAL CIRCUIT IS ASSURED

Teams A-plenty and Arrangements Practically Completed—Special Train and the Route It Will Follow.

According to advices from Detroit, A. R. Pardington, the well known New Yorker who several weeks since undertook the organization of a national racing circuit, has met with more success than he dared hope for. Howard E. Coffin and Howard Marmon, the new heads of the Contest Association, and others having defrayed the expenses of organizing the project, Pardington is quoted as saying that the chief difficulty he now is encountering is in finding room for all the teams that desire to follow the circuit in the special train of 19 cars for which arrangements have been made.

There will be room for only 30 racing cars, each manufacturer's team being limited to three cars and a crew of three men per car. In addition to the cars transporting these men and their automobiles, one car will be equipped as a machine shop in which mechanics may work en route; another car will be divided into bins for carrying spare parts, while the tire and magnet and other makers will share still another. One Pullman will carry the referee, two members of the technical committee, two representatives to operate the Warner electrical timing apparatus, and other officials, clerks, etc. One Pullman will be given over to the newspaper men.

According to the plans as outlined, the circuit will open at the Indianapolis speedway May 30, and after two days' racing will go to Louisville. Twenty-two cities will be visited by the grand circuit special train. The exact dates of each meet have not been set, but the following cities will be visited in this order: Indianapolis, Louisville, Atlanta, New York (Empire track, probably), Riverhead, Long Island; Port Jefferson, Long Island (hill climb); Boston, Worcester (hill climb); Providence, Wilkesbarre (hill climb), Philadelphia, Chicago (Algonquin hill climb), Elgin (road race), Detroit, Milwaukee, Indianapolis (speedway), St. Paul (state fair meet), Syracuse (state fair meet), Lowell (road race), Philadelphia (Fairmount Park road race), New York (Vanderbilt cup race), Atlanta (speedway), Savannah (Grand Prize), a circuit that will occupy some six months.

There will be 30 days of racing, 60 days of traveling covering about 7,000 miles, and the rest of the time the crews will be practicing on the various tracks and speedways and overhauling their cars, etc.

Moross Says He's Bought Oldfield Racers.

E. A. Moross, former manager of the Indianapolis Speedway, who now is the man

behind the men who are promoting the meet on the Jacksonville (Fla.) beach, has bought three of Barney Oldfield's "outlawed" racing cars, the Knox and the two Benzes. He so telegraphed the homefolk, so it must be true. Moross, of course, will seek to have the ban removed from the cars, which then will be raced on the beach and elsewhere. Oldfield himself, it is stated, will not apply for reinstatement.

To Cross Continent on Three Wheels.

Ward Sherwood and Otto Krause started to cross the continent on Friday last, 24th ult. They left the New York City hall at high noon, carrying a "message" from Mayor Gaynor to Mayor McCarthy, of San Francisco. They hope to deliver it in



TRANSCONTINENTAL THREE-WHEELERS

about 60 days. Many other young men, and old ones, have started with messages, and without them, on the long journey, but Sherwood and Krause are the first to attempt it with a three-wheeled three-track vehicle.

They are operating a Kelsey Motorette of 10 horsepower. All manner of single-track bicycles and all manner of four-wheeled two-track vehicles have crossed the continent, but never before has anyone had the hardihood to essay the feat on a vehicle with three wheels each running in a separate plane. It is this fact that adds interest to the Sherwood-Krause journey, and that cannot fail to make it an almost stupendous undertaking.

The young men will follow a route that will try their souls and the "sea-going" qualities of their motorette. Instead of tracing the usual roads via Albany, Buffalo and Chicago, they headed southward via Philadelphia, Washington, Baltimore, Richmond, and thence they must negotiate the trying roads of Alabama, Mississippi, Louisiana, Texas and over the rocks and deserts that lie between Texas and California, practically every mile of which requires skill and strenuous effort of any one trying to travel faster than a walk.

When last heard from the transcontinentalists were in Baltimore, which city they reached late Saturday last.

"SPEED KINGS" AT THE CARNIVAL

Burman and Kulick Gather Lion's Share of Glory at Mardi Gras Meet—Three Days of Racing.

With New Orleans once more in carnival attire for the annual celebration of the Mardi Gras festival and with the streets and shops and the houses just chock-a-block with confetti and merrymakers, the "big noise" really commenced out at the Fair Grounds where the automobile show and the automobile races "opened the ball" on Saturday last.

While the show received its share of attention, the way the crowd "vamoosed" to the mile oval track when the racing commenced showed conclusively the superior drawing power of rapidly moving automobiles over immobile ones, and when Kulick's little Ford "spider" won the initial race of the first day's meet, held on Saturday, 25th ult., the crowd just "up an' howled" in delight. But Kulick was not the only idol present. There was Caleb Bragg with his Fiat, "Wild Bob" Burman with a Buick, of course, and "Johnny" Aitken, the redoubtable National pilot who "irrevocably" quit the racing game not so long ago but who came back on several occasions. Lewis Strang and his associates with the jaw-breaking names also were slated to start in Case cars, but failed to put in appearance, for which the American Automobile Association suspended them all.

The sport started with a five miles race for cars of Class C having not more than 230 inches displacement. Kulick (Ford) won the event handily in 5:48:83. In fact, there never was any doubt of the outcome, as Kulick was not headed and finished way ahead of the Warren-Detroit driven by B. Evans and H. L. Cohen in an E-M-F, who finished second third, respectively.

A five miles race for cars in the same class, but with displacements up to 300 inches, brought out Kulick again, and once more he carried off the honors, only on this occasion his time was considerably better than it was in the former race. He finished the five circuits in 5:01, and defeated W. Donnelly, who drove a Cino, and A. J. Maisenville, in a Corbin, who finished in that order.

It was in the next event, a 10 miles race for cars up to 450 inches displacement, that Aitken got his first inning. Five starters lined up and at the crack of the pistol Aitken showed a little of his old form by jumping to the front, which position he held for the entire distance, winning in 10:03:22. Louis Disbrow, in another National, was second, and Jack Raycliffe (Knox), third.

One of the biggest events of the day and

the one which created the most spectacular finish was the five miles free-for-all in which a field of six, including Bragg, Burman, Aitken and Disbrow, started. Getting away with a rush, Bragg went to the front at the first turn. Burman was a little slow in starting but "lit out" after the disappearing Fiat with determination. The race was really between these two after the first mile, though another struggle was going on for third place in the bunch that was strung out behind them. Bragg won in the stretch by a fairly good margin, his time for the five miles being 4:40:17. Burman (Buick) was second and Disbrow (National) third.

Following this race Bragg made two trials to lower the existing track record and succeeded in the second attempt in hanging up the new mark of 52:60 for the mile, which eclipses Oldfield's mark of 53:80 by a narrow margin. Burman also twice tilted against the mile, doing 53:09 and 53:07, respectively.

The most thrilling event of the day and the one which brought out the largest field was the ten miles handicap, in which thirteen cars were entered. Burman in his Buick was the scratch man and gave away starts up to a minute and twenty seconds. By careful and consistent work Burman was able to creep up on the limit men and by the time the tenth lap was reached had passed everybody and had a good lead, which he maintained to the end. He was clocked for the ten circuits in 10:18:31. Kulick (Ford) with 20 seconds lead and Maisonville (Corbin) with a handicap of 1:05 annexed second and third places, respectively.

The longest race of the day was reserved till the last and consisted of a one hour event for cars in Class C. It was essentially a light car race, and while all the cars were on the track at the one time, they were divided into two classes, according to their piston displacements. Those up to 230 inches went in one class and those between 231 and 300 in the other. Almost from the very beginning Kulick led, his little white Ford scooting around the track well in advance of the field. The rest of the cars kept their respective positions fairly well, though there were several shifts on account of tire trouble, and A. F. Witt, in an E-M-F, quit in his 23d mile. In the smaller class, Jack Towers, driving a Warren-Detroit, nosed out his team mate, Evans, and won with a score of 53 miles to his credit. H. Cohen piloted his E-M-F into third place. Kulick reeled off 55 miles in the other division of the class, and thereby bettered the track record by five miles. W. Donnelly (Cino) was second and third place went to Maisonville, who drove a Corbin. The summary:

Five miles, for cars in Class C, 161 to 230 inches displacement—Won by F. Kulick, Ford; second, B. Evans, Warren-Detroit; third, H. L. Cohen, E-M-F. Time, 5:48:83.

Five miles for cars in Class C, 231 to 300 inches displacement—Won by F. Kulick, Ford; second, W. Donnelly, Cino; third, A. J. Maisonville, Corbin. Time, 5:01.

Ten miles for cars up to 450 inches displacement—Won by John Aitken, National; second, L. Disbrow, National; third, Jack Raycliffe, Knox. Time, 10:03:22.

Five miles free-for-all—Won by Caleb Bragg, Fiat; second, Robert Burman, Buick; third, L. Disbrow, National. Time, 4:40:17.

One mile time trials—Caleb Bragg, Fiat; time, 55:06 and 52:60. Robert Burman, Buick; time, 53:09 and 53:07.

Ten miles handicap free-for-all—Won by Robert Burman, Buick (scratch); second, F. Kulick, Ford (20 seconds); third, J. Maisonville, Corbin (1:05). Time, 10:18:31.

One mile time trial by Robert Burman (Buick)—Time, 53:07.

One hour race for cars in Class C in two divisions—for cars from 161 to 230 inches displacement: Won by Jack Towers, Warren-Detroit; second, Bob Evans, Warren-Detroit; third, H. Cohen, E-M-F; distance, 53 miles. For cars from 231 to 300 inches displacement: Won by F. Kulick, Ford; second, W. Donnelly, Cino; third, A. J. Maisonville, Corbin; distance, 55 miles.

By winning every event in which he started, "Bob" Burman proved the star performer at the second day's meet, Sunday, 26th ult, which, except for the Buick pilot's sensational driving, developed little of a startling nature. Kulick kept up his good work of the previous day by winning both the five miles races for cars in Class C, but the principal race of the day, a one hour event for cars in the same class but not exceeding 600 inches displacement, went to Burman. He lost almost a minute in the get-away in this race, but by furious driving Burman caught the leaders at the 20 miles post and thereafter had things pretty much his own way. He won with a total of 57 miles to his credit. The summary:

Five miles for cars in Class C, 161 to 230 inches displacement—Won by F. Kulick, Ford; second, B. Evans, Warren-Detroit; third, J. Towers, Warren-Detroit. Time, 5:06:26.

Five miles for cars in Class C, 231 to 300 inches displacement—Won by F. Kulick, Ford; second, W. Donnelly, Cino; third, A. J. Maisonville, Corbin. Time, 5:16:20.

Five miles match race between H. B. Pennepacker (Stearns) and T. S. Duby (Midland)—Won by Pennepacker. Time, 5:42:45.

Five miles for cars in Class C, 301 to 600 inches displacement—Won by Robert Burman, Buick; second, John Aitken, National; third, Louis Disbrow, National. Time, 10:04.

Five miles free-for-all—Won by Robert Burman, Buick; second, Caleb Bragg, Fiat; third, John Aitken, National. Time, 4:50:33.

Five miles for cars in Class A—Won by William Fritsch, Buick; only man to finish. Time, 5:14:43.

Ten miles handicap free-for-all—Won by Robert Burman, Buick (scratch); second, A. J. Maisonville, Corbin (1:05); third, W. Donnelly, Cino (1:05). Time, 10:02:50.

One hour race for cars in Class C not exceeding 600 inches displacement—Won by Robert Burman, Buick; second, W. Donnelly, Cino; third, A. J. Maisonville, Corbin. Distance, 57 miles. L. Disbrow, National, withdrew after 22 minutes; J. Towers, Warren-Detroit, withdrew after 11 minutes.

The third and last day's racing was inaugurated with a five miles free-for-all, in which Caleb Bragg in a Fiat was returned the winner with plenty of room between him and Louis Disbrow, who drove his National into second place. Disbrow also was second in the 10 miles free-for-all handicap which followed, first place being taken by A. J. Maisonville in a Corbin, who started with 45 seconds handicap.

The National's pilot was more lucky in the star event of the day, a 50 miles race for cars in Class C, and succeeded in landing in front of the field after a hard grind. The only accident which occurred during the three days took place in this race and was caused by a tire blowing out on the Midland, driven by Ralph Ireland. The car swerved through part of the fence, and both driver and mechanic were thrown out, but without serious consequences to them, though the car was put out of commission. Disbrow's time for the 50 circuits was 52:29:77 and Kulick in the Ford again got in the limelight by annexing second honors. Third place went to W. Donnelly (Cino), who finished close up to Kulick. The summary:

Five miles free-for-all—Won by Caleb Bragg, Fiat; second, Louis Disbrow, National. Time, 5:07:19.

Ten miles handicap free-for-all—Won by A. J. Maisonville, Corbin (45 seconds); second, Louis Disbrow, National (scratch). Time, 10:37:45.

Fifty miles for cars in Class C—Won by Louis Disbrow, National; second, F. Kulick, Ford; third, W. Donnelly, Cino. Time, 52:39:77.

Look Out for the "Equipoise"; It's Coming.

E. L. Tunis, of Windsor Hills, a suburb of Baltimore, Md., has given the world another "revolutionizer." He calls it the "Equipoise" and it will go 100 miles an hour, plough through mud that will stall any ordinary automobile, and do all the other things common to world-beaters. It is a rig suggesting some of the prehistoric bicycles. It has two large wheels arranged bicycle fashion, also two small wheels secured to outriggers which are designed to prevent the "Equipoise" from losing its equilibrium.



Boston Makes Ready for Its Big Show

Although the Boston automobile show partakes of the magnitude of the national exhibitions and even approaches them in interest to the trade and industry at large, as well as to the enthusiastic local public, its traditions have caused it to be regarded somewhat in the light of a gigantic Pandora's box by reason of the varied emotions which its annual disclosures engender. Like the beguiling charms of feminine beauty the treasures which yearly are displayed within the walls of the huge Mechanics' building are "ever the same, yet ever changing." But even as a majority of the exhibits, the skeleton of the attraction, so to speak, are the same as already have done duty at the two great shows in New York and Chicago, it follows that the allurements of the flesh—the pervading atmosphere, not to hint at the charms of paint and floral adornments, are wholly local characteristics.

In many respects the show which is to open on Saturday evening next, March 4th, promises to maintain the reputation established by its predecessors. As was the case a couple of years ago, a late rush of exhibitors has necessitated the annexation of Horticultural Hall, a few blocks removed from Mechanics' building, for an overflow display, and a motor car and "transfer" system will be placed at the disposal of the visitor. At the same time, the official exhibitors' list indicates that there will not be as many actual displays as were in evidence last year.

Ninety-three exhibitors of cars have enrolled, who will display something over a hundred different products. A score of these will be of the commercial variety, the majority, however, being of the pleasure type, and all but about a dozen of them being products that already have been exhibited at the previous shows of the present season. There will be something like 170 displays of parts, accessories and supplies of various sorts, including cosmetics, non-alcoholic beverages, pop-corn and chewing-gum, in all of which the Boston show-going public invariably betrays an

intense and delighted interest. The total number of exhibitors, therefore, will be 262, while the total of last year was 284, including a dozen exhibits of motorcycles—a type of machine that is not to be represented at all this year.

Differing from previous expositions of the present season in that it will not reveal much in the way of brand new constructions, the show still may be expected to mark the unveiling of not a few innovations of a striking nature, no previous exhibition of the Boston Automobile Dealers' Association having failed to produce at least one rotary engine, compressed-air transmission system or other equally radical product. While, as the original "steam car town," the display of machines of this type, numbering, as it does, two local makers in addition to a third from the Middle West, may be expected to be more complete than that at any other show. With a rare combination of dealers, jobbers, manufacturers' agents, supply houses and producers to draw from, it also follows that the accessory display will be, as usual, one of the most comprehensive of the year.

As far as the array of machines that have not been shown at either of the "big" displays of this season, there will be among others the Apperson, Empire, Imperial, Morse, Welch, Herreshoff and Grout, the Stanley and Clark steamers, and the Wilcox trucks. The foreign contingent will include the British Napier, Renault and S. L. P. A., the latter an Italian product.

In respect to the decorations, which contribute the necessary "local color" to the show, the official accelerator of show sentiment thus portrays them:

"Through the long loggia, treated as a leafy bower among the branches of which hundreds of miniature lamps twinkle, the visitor will enter Exhibition Hall. The hundred columns and massive brackets and girders of this immense space will present a most beautiful scene, being completely covered with over 25,000 feet of stained green latticework over which 10,000 imported Australian maiden hair ferns will be laced.

Delicate flowerets in white, pink and lavender trail over the entire fernery, while huge baskets of electrically illuminated flowers and foliage are suspended from various arches over the main aisles. Long festoons of bright lamps give proper illumination to one of the most novel features ever presented in a public exhibit of this character, shown in this case by two score costly oil paintings, all about eight feet square, enclosed in artistically modeled frames in burnished gold leaf. These paintings are designed for the entire wall of this hall, and have been painted by leading scenic artists of Boston from actual views especially for this occasion. The subjects illustrate the famous automobile drives of the world and are strikingly well executed.

"To 'bring over' these art works into accord with the main decoration, the architect flanks each painting with lattice and foliage, thus bringing all into an harmonious whole. The quality of floor coverings for exhibitors in the Boston shows has always been noted as far superior to any show in the country. Thirteen thousand yards will be used this year, nearly ten thousand yards of this being of highest grade grass matting, and the balance in the basement of linoleum.

"For the first time in the history of automobile shows, adjustable standard signs will be introduced in all open spaces. These are seven feet high, contain name of car, also agent's name and address, and are located in spaces as desired to suit arrangement of his display by the exhibitor.

"The architectural features of a composite building like Mechanics' demand treatment by the designer of a wide latitude, and herein lies the subtle surprise always awaiting interested spectators. The transformation as one leaves Exhibition and enters Grand Hall is complete. Here the central motif is structural rather than natural, and yet no trace of heaviness is evident. Colonial Hall might be its designation, for thirty great fluted columns of finest workmanship, twenty-five feet high.

topped by Scamozzi capitals and those on the grand aisle surmounted by gilded eagles will attract the eye as the keynote of a most beautiful decorative scheme. Six of these are located on the stage front; an equal number are on the opposite wall, while the remainder are used on the main floor. Each column is featured with collets of gilded electroliers diffusing light from curved arms. Encircling strands of illuminated roses run up the shafts and from cap to cap great festoons of foliage are pendant.

"Below an azure blue ceiling are suspended 20 great floral electroliers shedding soft radiance downward. The bare walls and harsh lines of the proscenium arch are completely obliterated by a magnificent new curtain in blue plush and gold ornamentation. Rich red and gold paneling nine feet high will encircle Grand Hall on the side walls of floor and balcony, while the balcony fronts will all be marbled, and this classic treatment still further beautified by delicate foliage with occasional dashes of color produced by vari-colored flowers. Nearly five thousand lights added to the customary supply will assist in producing a scene of beauty equalled by no previous occasion in Boston."

The complete list of exhibitors, their locations and their products follows, numbers above 700, indicating displays that will be staged in Horticultural Hall.

Cars.

Abbott-Detroit Motor Car Co., of New England (720)—Abbott-Detroit.
American Automobile Co. (33)—American, Ohio and Krit.
American Simplex Co. (30)—Amplex.
Atlas Motor Car Co. (21-250)—Atlas.
Austin Co. (709-710)—Austin.
Autocar Co. (326-327-328)—Autocar.
Atterbury Motor Car Co. (248-249)—Buffalo trucks.
Babcock Electric Car Co. (37)—Babcock electrics.
Bedard, F. S. (725)—Whiting.
Boston Electric Garage Co. (28-29 and 221)—Detroit electrics.
Boston Motor Co. (132)—Kline.
Bowman Co., J. W. (3-7)—Stevens-Duryea and Everitt.
British Napier Motors (150)—English Napier.
Brush Runabout Co. (27)—Brush.
Buick Motor Co. (137-141 inc.)—Buick.
Butler Motor Car Co. (200-208 inc.)—Rapid trucks.
Buxton Machinery Co., W. A. (316-317)—Garford.
Cadillac Automobile Co., of Boston (1)—Cadillac.
Carhartt Motor Co. (715)—Carhartt.
Cartercar Co. (730-731-732)—Cartercar.
Charles, V. A. (136-142)—Inter-State.
Chase Motor Truck Co. (346)—Chase trucks.
Chicago Pneumatic Tool Co. (362)—Utility.

Clarke-Carter Automobile Co. (716)—Cutting.
Clark, Edw. S. (247)—Clark steam cars.
Coburn Auto Sales Co. (217)—Enger.
Columbus Buggy Co. (147-148)—Firestone-Columbus.
Connell & McKone Co. (32-314)—Overland.
Cunningham Sons & Co., J. (312-313)—Cunningham.
Curtiss-Hawkins Co. (143-144-145-228-235)—Speedwell.
Dayton Auto Truck Co. (310)—Dayton trucks.
Decatur Motor Co. (700-701-702)—Herreshoff.
Dodge Motor Vehicle Co. (11)—Pope-Hartford and Waverly electrics.
Easton Machine Co. (245-246)—Morse.
E-M-F Boston Co. (34-35)—E-M-F and Flanders.
Empire Motor Car Agency (214)—Empire "20."
Essex Automobile Agency (332-335 inc.)—Warren-Detroit.
Fay Co., Roy A. (103-104)—Matheson.
Fiat Automobile Co. (114-115)—Fiat.
Ford Motor Co. (118-119)—Ford.
Franklin Automobile Co. (128-129-229-234)—Franklin.
Fuller, Alvin T. (2-318-324 inc. and 703)—Packard.
General Vehicle Co. (329-330)—General electric trucks.
Grabowsky Power Wagon Co. (211-212-213)—Grabowsky trucks.
Grout Automobile Co. (105)—Grout.
Habich, G. E. & H. J. (133)—Cole.
Harrison & Co., Robt. (209-210)—Heath, S. F. (146)—Case.
Henry Motor Car Sales Co. (359-360)—Henry.
Hudson Colby Co. (100)—Haynes.
Imperial Auto Co. (726-727)—Imperial.
Jackson Motor Car Co., of New England (311)—Jackson.
Jenkins, W. M. & Co. (22-23)—Mitchell.
Kelsey Mfg. Co., C. W. (155-155A)—Motor-ette.
Kissel Kar Co. (20)—Kissel.
Koehler Sporting Goods Co., H. J. (350-351-352-364)—Hupmobile.
Lexington Motor Car Co. (343-344-345)—Lexington.
Lenox Motor Car Co. (209-210)—Linscott Motor Co. (120-121-130-131)—Reo and Moon.
Locomobile Co. of America (111-112)—Locomobile.
Lowe-Howard Co. (26)—Krit and Correja.
MacAlman, J. H. (124-127 inc.)—Columbia and Stearns.
Maguire, J. W. (14-18-254)—Pierce-Arrow.
Massachusetts Motor Co. (700-702 inc.)—Oakland.
Moline Automobile Co. (135)—Moline.
Morse, Cutler & Co., Alfred (113)—Renault and S. L. P. A.
Nichols Co., D. P. (251-253 inc.)—Kelly trucks.

Olds Motor Works (101)—Oldsmobile.
Parker & Co., F. R. (102-608-346)—Elmore.
Park Square Automobile Station (236-237-13-17-226-227)—Alco and Stoddard-Dayton.
Peerless Motor Car Co. of New England (12-16-321-325)—Peerless.
Premier Motor Co. of New England (24-25)—Premier.
Proctor Co. (31)—Pullman.
Rambler New England Co. (106-107)—Rambler.
Rawles-Cobb Co. (218-219-220)—Johnson trucks.
Reliance Motor Truck Co. (704-705-706-711)—Reliance trucks.
Russel & Co., W. L. (38)—Regal and Apperson.
Sampson Mfg. Co., Alden (222-223-224)—Sampson trucks.
Schacht Motor Car Co. (149)—Schacht.
Selden Motor Car Co. (135)—Selden.
Smith, Fred S. (15)—Mercer.
Stanley Motor Carriage Co. (19)—Stanley steamer.
Thomas Motor Branch Co., E. R. (36)—Thomas.
Underhill Co. (6-10-255-256)—Knox.
United Motor Boston Co. (116-117-134)—Maxwell.
Velie Motor Vehicle Co. (151-52)—Velie.
Welch Motor Car Co. of New England (707-708)—Welch.
White Co. (5-9-230-232-233)—White gasoline and steam cars.
White-Ware Co. (153-154)—Bergdoll.
Whitten-Gilmore Co. (108-109-110-310)—Chalmers and Hudson.
Wing, F. E. (122-123)—Marmon.
Winton Motor Carriage Co. (4-8)—Winton.
Wilcox Motor Car Co. of New England (339-340)—Wilcox trucks.

Accessories.

Adams, J. Q., Boston, Mass. (P. R. Hall and 308)—Publications.
Ajax-Grieb Rubber Co., New York City (422)—Ajax tires.
Ajax Trunk & Sample Case Co., New York City (622)—Tire trunks.
Aluminum Solder Co. of Boston, Boston, Mass. (613 A. A.)—Aluminum solder.
American Ever Ready Co., New York City (533)—Ever Ready batteries and lamps.
American Oil Pump & Tank Co., Boston, Mass. (618)—Oil and gasoline storage apparatus.
American Storage Battery Co., Cambridge, Mass. (614)—Storage batteries.
Amesbury Metal Body Co., Amesbury, Mass. (P. R. Hall)—Bodies.
Atlas Chain Co., Brooklyn, N. Y. (410)—Non-skid chains.
Auburn Auto Pump Co., Auburn, N. Y. (552)—Tire pumps.
Autogenous Welding Co., Springfield, Mass. (303-304)—Welding apparatus.
Auto Equipment Mfg. Co., Newton, Mass. (550 A. A.)—Supplies and specialties.

- Auto Improvement Co., New York City (532)—Accessories and specialties.
- Automobile Lighting Co., Springfield, Mass. (611)—Lighting and ignition apparatus.
- Baldwin Chain & Mfg. Co., Worcester, Mass. (518)—Baldwin chains and recoil checks.
- Batavia Rubber Co., Batavia, N. Y. (560-61)—Batavia tires.
- Bi-Motor Equipment Co., Boston, Mass. (560-61)—Accessories.
- Borne-Scrymser Co., New York City (604)—Lubricants.
- Bosch Magneto Co., New York City (514-15)—Ignition devices.
- Boston Tire & Rubber Co., Boston, Mass. (609)—Tires.
- Boston U-Auto-Varnish Agency, Boston, Mass. (721)—Paints and varnishes.
- Bowser, S. F. & Co., Fort Wayne, Ind. (443-448)—Oil and gasoline storage apparatus.
- Boyd, F. Shirley, Boston, Mass. (443)—Supplementary spiral springs.
- Bucklin, Walter S., Boston, Mass. (503 A. A.)—
- Burn-Boston Battery Manufactory Co., Boston, Mass. (408)—Sealed liquid batteries.
- Butts & Ordway, Boston, Mass. (240)—Tire vulcanizers.
- Cavanaugh, Ray, Boston, Mass. (715)—Champion Ignition Co., Detroit, Mich. (425 A. A.)—Ignition devices.
- Champion Igniter Co., Boston, Mass. (460)—Ignition devices.
- Chandler & Farquar, Boston, Mass. (243-244)—Machine tools and machinists' supplies.
- Clark Foundry Co., Rumford, Me. (337)—
- Cleveland Speed Indicator Co., Cleveland, O. (551)—Cleveland speed and time indicators.
- Clayton Air Compressor Works, New York City (349)—Garage and portable tire pumps.
- Coes Wrench Co., Worcester, Mass. (420)—Wrenches.
- Columbia Lubricants Co. of New York, New York City (440)—Lubricants.
- Connell, W. J., Boston, Mass. (421)—E & J Lamps, Elite jacks and W. & S. magnetos and carburetters.
- Connecticut Tel. & Elec. Co., Meriden, Conn. (527)—Shock absorbers, spark coils, switches and ignition devices.
- Consolidated Rubber Tire Co., New York City (528)—Tires.
- Continental Caoutchouc Co., New York City (548-9)—Continental tires.
- Cook's Sons, Adam, New York City (545)—Lubricants.
- Couch & Seeley Co., Boston, Mass. (413)—Casgrain speedometers.
- Coward Auto Supply Co., Boston, Mass. (612-13)—Supplies.
- Cox Brass Mfg. Co., Albany, N. Y. (602)—Accessories.
- Cramp & Sons Ship & E. B. Co., Wm., Philadelphia, Pa. (526)—Bronze and bearing metals.
- Crane, L. M. & Co., Boston, Mass. (238-239)—Lubricants.
- Crowell Chemical Co., Beverly, Mass. (728 A. A.)—
- Culver-Stearns Mfg. Co., Worcester, Mass. (250)—Electric lighting specialties.
- Daniels, Smalley, Boston, Mass. (361)—Kokomo ignition appliances, Globe tool and battery boxes and Kingston carburetters.
- Dayton Electrical Laboratories Co., Dayton, O. (550)—Delco ignition apparatus.
- Diamond Rubber Co., Akron, O. (419)—Diamond tires.
- Dixon Crucible Co., Jos., Jersey City, N. J. (516-17)—Graphite.
- Dover Stamping & Mfg. Co., Cambridge, Mass. (603)—Drip pans, funnels and measures.
- Duren & Kendall, Boston, Mass. (305-6-7)—Vacuum cleaners.
- Eagle Oil & Supply Co., Boston, Mass. (556 A. A.)—Lubricants.
- Edison Storage Battery Co., West Orange, N. J. (512)—Edison storage batteries.
- Electric Speedometer & Dynamometer Co., Washington, D. C. (624)—Hopkins's electric speed indicators.
- Electric Storage Battery Co., Philadelphia, Pa. (546-7)—Accumulators.
- Empire Tire Co., Trenton, N. J. (508-509)—Empire tires.
- Empire Top & Windshield Co., Boston, Mass. (728 B. B.)—Tops and windshields.
- Ernst's Sons, C. F., Buffalo, N. Y. (356)—Turntables.
- Fegley Tire Chain Co., Philadelphia, Pa. (363)—Non-skid chains.
- Findeisen & Kropf Mfg. Co., Chicago, Ill. (619)—Rayfield carburetters.
- Firestone Tire & Rubber Co., Akron, O. (506-7)—Firestone tires.
- Fisk Rubber Co., Chicopee Falls, Mass. (436)—Fisk tires.
- Flentje, Ernst, Cambridge, Mass. (447)—Hydraulic recoil preventer.
- Ford, Percy, Co., Boston, Mass. (400-1)—Supplies.
- Gabriel Horn Mfg. Co., Cleveland, O. (444-5)—Gabriel horns and Foster shock absorbers.
- Gibney & Bro., J. L., Philadelphia, Pa. (623)—Solid tires and vulcanizers.
- G & J Tire Co., Indianapolis, Ind. (556-7)—G & J tires.
- Goodrich Co., B. F., Akron, O. (540-1)—Goodrich tires.
- Goodyear Tire & Rubber Co., Akron, O. (543-4)—Goodyear tires.
- Gray & Davis, Amesbury, Mass. (434)—Lamps and electric lighting specialties.
- Griffin, Geo. L. & Son, Boston, Mass. (P. R. Hall)—
- Haines Measuring Pump Sales Co., Harrisburg, Pa. (348)—Oil and gasoline storage systems.
- Harris Oil Co., A. W., Providence, R. I. (510)—Lubricants.
- Hartford Suspension Co., Jersey City, N. J. (502)—Truffault-Hartford shock absorbers and Hartford auto-jack.
- Hartford Rubber Works, Hartford, Conn. (537-8)—Hartford tires.
- Havoline Oil Co., New York City (559)—Lubricants.
- Haws, Geo. A., New York City (415)—Lubricants.
- Heinze Electric Co., Lowell, Mass. (536)—Ignition and lighting specialties.
- Hillman Auto Supply Mfg. Co., Boston, Mass. (532 A. A.)—Brass and plated specialties.
- Hoffecker Co., Boston, Mass. (519)—Speedometers.
- Holt & Bebee, Boston, Mass. (356 A. R.)—Electric lamps.
- Holtzer Cabot Electric Co., Brookline, Mass. (621)—Lighting and ignition specialties.
- Homo Co. of America, Jersey City, N. J. (531)—Homo mixer and carburetter.
- Hopewell Bros., Newton, Mass. (442)—Tire and lamp covers.
- Hydraulic Oil Storage Co., Detroit, Mich. (625)—Oil and gasoline storage systems.
- International Metal Polish Co., Indianapolis, Ind. (357 A. A.)—Blue Ribbon metal polish.
- Kellom & Co., Chas. F., Boston, Mass. (429 A. A.)—Lubricants.
- Kent Mfg. Works, Atwater, Philadelphia, Pa. (539)—Ignition devices.
- Keystone Lubricating Co., Philadelphia, Pa. (414)—Lubricants.
- Kilgore Mfg. Co., Boston, Mass. (607)—Kilgore air shock absorbers.
- Kinney Mfg. Co., Boston, Mass. (617)—
- K-W Ignition Co., Cleveland, O. (620)—Ignition specialties.
- Leather Tire Goods Co., Niagara Falls, N. Y. (535)—Adjustable tire treads and non-skid bands.
- Lee Co., J. Ellwood, Conshohocken, Pa. (500)—Jelco-Atlas puncture proof inner tube.
- Leland & Co., W. H., Worcester, Mass. (553)—Worcester spark coils and grinders.
- Lovell-McConnel Mfg. Co., Newark, N. J. (416)—Klaxon horns and Raiswell jacks.
- Lunt-Boss Co., Boston, Mass. (315)—Stationary engines, accumulators and lighting systems.
- Maguire, J. J., Boston, Mass. (717)—
- Marburg Bros., Inc., New York City (511)—Mea magneto.
- Mason Co., Geo. H., Boston, Mass. (516)—
- McCue Co., Hartford, Conn. (513)—Axles, etc.
- Meteor Gas Co. of New York, New York City (723)—Acetylene gas tanks.
- Michelin Tire Co., Milltown, N. J. (417)—Michelin tires.
- Milbury Steel Foundry Co., Milbury, Mass. (450 A. A.)—Castings.

Miller, Chas. E., New York City (429)—Supplies and specialties.
 Moore Smith Co., Boston, Mass. (P. R. Hall)—Fur garments.
 Morgan & Wright, Detroit, Mich. (439)—Morgan & Wright tires.
 Morrison-Ricker Co., Grinnel, Ia. (P. R. Hall)—Gloves.
 Morse, J. L., Franklin, Mass. (734)—Motor Specialties Co., Boston, Mass. (409)—Flash auto lighter and specialties.
 Motor Vehicle Publishing Co., New York City (358)—Publications.
 Motz Clincher Tire & Rubber Co., Akron, O. (555)—Motz tires.
 Murray, P. A. & Co., Newton, Mass. (353-4)—Tops.
 National Brake & Clutch Co., Boston, Mass. (300)—Cork inserts.
 National Carbon Co., Cleveland, O. (438)—Dry Cells.
 National Tube Co., Pittsburg, Pa. (530)—Shelby steel tubing.
 Nesmith Co., C. I., Reading, Mass. (407)—Cleansers and polishes.
 Norton Co., Worcester, Mass. (241)—Carborundum wheels and grinding devices.
 Pantasote Co., New York City (529)—Top materials.
 Pennsylvania Rubber Co., Jeanette, Pa. (432)—Pennsylvania tires.
 Pittsfield Spark Coil Co., Dalton, Mass. (421)—Ignition devices.
 Post & Lester Co., Hartford, Conn. (425)—Accessories.
 Prentiss, Saml. L., Boston, Mass. (722)—Priesing, G. W., Boston, Mass. (718)—Randall-Faichney Co., Boston, Mass. (554)—Jericho exhaust horns, B-line grease guns and Bing spark plugs.
 Raymond, Arthur B., Boston, Mass. (441)—Reliance Speedometer Co., Boston, Mass. (427 A. A.)—Speed indicators.
 Remy Electric Co., Anderson, Ind. (542)—Magnetos and lighting specialties.
 Republic Rubber Co., Youngstown, O. (424)—Republic tires.
 Robinson & Son Co., Baltimore, Md. (534)—Lubricants.
 Rome Soap Mfg. Co., Boston, Mass. (302)—Specialties.
 Royal Equipment Co., Bridgeport, Conn. (503-4)—Raybestos friction fabric.
 Russell & Co., T. F., Boston, Mass. (606)—Accessories.
 Sage Trunk Co., Boston, Mass. (610)—Trunks and suit cases.
 Salmon, Jno. A., Boston, Mass. (609 A. A.)—Monograms.
 Sawyer Oil Co., Howard B., Boston, Mass. (225)—Lubricants.
 Shaler Co., C. A., Waupun, Wis. (505)—Vulcanizers.
 Shannon, T. R., Hartford, Conn. (350 A. A.)—Polishes.
 Shawmut Tire Co., Boston, Mass. (450)—Shawmut tires.
 Sireno Co., New York City (600)—Sireno horns.

Smith Iron Co., G. W. & F., Roxbury, Mass. (216)—
 Splittorf, C. F., New York City (423)—Ignition specialties.
 Standard Thermometer Co., Boston, Mass. (601)—Standard speedometer.
 Star Rubber Co., Akron, O. (501)—Star tires.
 Stover Lang Co., Boston, Mass. (411)—Stromberg Motor Devices Co., Chicago, Ill. —Stromberg carbureters.
 Swinehart Tire & Rubber Co., Akron, O. (523-4)—Swineheart tires.
 Taylor Motor Sales Co., Boston, Mass. (712-14)—
 Underhay Oil Co., Boston, Mass. (446)—Lubricants.
 United Manufacturers, New York City (431)—Jones speedometer, Weed chains, Soot-Proof plugs, Non-Fluid oils, etc.
 U. S. Lighting & Heating Co., New York City (520)—Storage batteries.
 Vacuum Oil Co., Boston, Mass. (521-2)—Lubricants.
 Valentine & Co., New York City (558)—Varnishes and paints.
 Valve Seating Tool Co., Southport, Conn. (357)—Valve grinding tools.
 Valvoline Oil Co., Boston, Mass. (301)—Lubricants.
 Veeder Mfg. Co., Hartford, Conn. (437)—Odometers and speed indicators.
 Victor Auto Supply Mfg. Co., New York City (615)—Supplies and specialties.
 Voorhees Rubber Co., Jersey City, N. J. (605)—Rubber hose and packing.
 Ward, Edgar T., Boston, Mass. (242)—Metals.
 Warner Instrument Co., Beloit, Wis. (435)—Warner autometers.
 Wayne Oil Tank & Pump Co., Fort Wayne, Ind. (355)—Oil and gasoline storage systems.
 White & Bagley Co., Worcester, Mass. (426)—Lubricants.
 Whitney Mfg. Co., Hartford, Conn. (449)—Whitney chains and keying systems.
 Wilkinson & Co., Boston, Mass. (430)—Machinery and tools.
 Williams & Co., J. H., Brooklyn, N. Y. (525)—Forgings.
 Winship, W. W., Boston, Mass. (341-2)—Motor trunks.

Changes Among Prominent Tradesmen.

Herbert O. Herrick has been made manager of the H. W. Johns-Manville Co.'s branch in Detroit. Formerly he covered Michigan territory for the company.

E. G. Oliver has been appointed manager of the E-M-F branch in Philadelphia. Previously he was sales manager of the Selden Motor Vehicle Co., of Rochester, N. Y.

W. D. Myers and H. C. Stutz, who were connected with the Marion Motor Car Co., have joined the staff of the Empire Motor Car Co. of Indianapolis. Myers has become sales manager and Stutz factory manager.

L. C. Smith has assumed charge of the advertising department of the Abbott Motor Co., of Detroit. Formerly he was identified with the advertising departments of the American Blower Co. and the Joseph Mack Printing Co.

Parsons Patent Wins Victory in Germany.

While they are fighting over the Parsons patent covering the Weed tire chain grip in this country, similar litigation is in progress in Germany, where the Parsons-Weed interests have scored the first victory, Romain Talbot, of Berlin, having secured an injunction upholding the Parsons patent and restraining Robert Hintze, of Frankfort, from in any way handling an infringing device which he had been advertising and selling. The decree of the Royal District Court, which rendered the decision, fixes a penalty of 1,000 marks for each instance of infringement which may be committed in violation of the injunction.

Connecticut Extends Branch System.

The Connecticut Telephone & Electric Co., of Meriden, Conn., has opened up a branch in connection with the E. J. Edmond Co., 1783 Broadway, New York, where a complete line of the well known Connecticut ignition products and shock absorbers will be kept in stock. A factory branch has been opened also at 1146 Michigan avenue, Chicago, and Philadelphia and Boston branches are about to be established. The Pacific Coast trade will be taken care of by Hughson & Morton, with main office at San Francisco, and with branches at Los Angeles, Portland and Seattle.

Hofwebers Making an Engine Starter.

Joseph E. and August J. Hofweber, of La Crosse, Wis., have formed the Motor Devices Manufacturing Co and located at 316 So. Fourth street in that city. Their immediate purpose is the manufacture of the Hofweber motor starter, a device designed particularly for use on Ford cars. The starter is a small spring and rod contrivance which is placed between the carburetter and intake manifold and which, it is claimed, permits the motor to start under all weather conditions with a single turn of the crank. It is asserted that it can be installed by anyone in ten minutes.

Ohio Lamp Manufacturers Incorporate.

The Victor Lamp Co., which as a firm recently erected a factory for the manufacture of automobile lamps in Camp Washington, Ohio, has been incorporated under the laws of the State of Ohio, with a capital of \$100,000. W. J. Corcoran is the president of the concern while John L. Corcoran, Edward B. Corcoran, H. R. Kerans and John Galvin are associated with him as directors.

Six More Local Shows Run Their Allotted Course

Baltimore Gives a Roman Suggestion to its Big Display

Marked by a sort of allegorical picture of a Roman chariot race picked out in colored electric bulbs the third annual show given under the auspices of the Automobile Club of Maryland closed a four days' run in the Auditorium in Baltimore on Saturday evening last, 25th ult. The authors of the decorative scheme made use of nearly every color in the rainbow in the canopy of light which formed the "sky," the idea being further supplemented by a number of Roman vases of imitation marble which stood at intervals around the hall. The vases contained large branches of oak with the leaves intact and there also was secured to them a variety of artificial flowers, which concealed tiny electric bulbs. An ocean of multi-colored bunting was used for draperies. The most striking feature of the decorations, however, was an immense electrical effect in the form of an emblem of the Automobile Club of Maryland, built up of colored lights with the outer wheel arranged to revolve and hung suspended in mid air directly opposite the entrance.

Though the number of exhibitors of cars was exactly the same this year as it was at the last show, the number of makes of cars on view was less by one, the total number of brands exhibited being fifty-six.

Three cars, the Lord Baltimore, the Spoerer and the S. G. V., made their initial appearance at a 1911 show, the two former being native products and the latter the product of the Acme Motor Car Co., of Reading, Pa. The total number of exhibitors was sixty-two, of whom twenty-four displayed accessories and specialties, as follows:

Automobiles: Abbott-Detroit Motor Car Co., Abbott-Detroit and Krit; Auto Outing Co., Buick, Haynes, Welch-Detroit pleasure cars and Rapid trucks; Auto Co. of Maryland, Kissel, Correja and Babcock electrics; Callahan, Atkinson & Co., Locomobile; Crawford Automobile Co., Crawford; Cooper & Upton Automobile Co., Moon; J. S. Ditch & Co., Kline; Edwin M. Fleishman, Lozier; Foss-Hughes Motor Car Co., Pierce-Arrow; Franklin Automobile Co., Franklin; Ford Auto Co., Ford; International Harvester Co., International; Keller Auto Co., Inter-State; Lord Baltimore Motor Car Co., Lord Baltimore; Lambert Automobile Co., Maxwell, National and Hudson; Mack Motor Truck Co., Mack trucks; C. R. Misner, Oldsmobile; Motor Car Co., Stevens-Duryea and Overland; Model Automobile Co., Everitt; Mar-Del Mobile Co., Packard; Mount Vernon Motor Car Co., Autocar and Regal; Madison Motor Car Co., Velie and Paige-Detroit;

Neeley & Ensor, Jackson; Pullman-Shafer Motor Car Co., Pullman; Quinby & Co., Simplex; Rice Bros., S. G. V. and Rauch & Lang electrics; Carl Spoerer's Sons' Co., Spoerer; W. P. Shuler, Mitchell; Stoddard-Dayton Auto Co., Stoddard-Dayton; Walter Scott, Marmon; Standard Motor Co., Cadillac; F. W. Sandruck, Moline, and Gaeth pleasure cars and Atterbury trucks; White Automobile Co., White; Winton Motor Carriage Co., Winton; J. L. B. Wilhide, Kelly trucks; D. C. Walker Auto Co., Garford, Flanders, E-M-F pleasure cars and Grabowsky trucks; Zell Motor Car Co., Peerless, Chalmers and Hupmobile; Oakland Motor Co. of Baltimore, Oakland.

Accessories: Auto Supply Co., Auto Tire Preserver Co., S. F. Bowser & Co., Baltimore Buggy Top Co., Club Garage, Charles Elliott & Co., Hydraulic Oil Storage Co. of Maryland, H. W. Johns-Mansville Co., R. Milton Norris Co., Peace & Peace, L. Sonneborn & Sons, Inc., Scott Demountable Rim Co., Southern Auto & Marine Supply Co., F. W. Sandruck, Standard Oil Co., Automobile College, George R. Curtis, Chase Motor Co., Children's Hospital School, Howard A. French & Co., Thomas J. Gallagher, Maryland Motor Car Insurance Co., National Surety Co. and "Little Joe" Weisenfeld Co.

Furniture Made Way for Motor Cars in Grand Rapids

Thirty-seven brands of automobiles were displayed at the second annual show which closed on the 18th ult. in Grand Rapids, Mich. The exhibition was opened three days prior to that date in the Klingman furniture exhibition building which had been elaborately decorated for the occasion. Nearly double the number of visitors as last year attended the show passed the ticket takers this year, and the show as a whole was bigger and better than its predecessor. The list of exhibitors and their products was as follows:

Automobiles: Oswald Motor & Supply Co., Baker electric, Whiting and Kissel; Moran Auto Sales Co., Maxwell and Columbia; Buick Motor Co., Buick; White Motor Car Co., White steam and gasoline and Hudson; Becker Auto Co., Ford; T. J. Betts, Hupmobile and Hupp-Yeats electrics; Grand Rapids Overland Co., Overland; Stanley A. Dwight, Brush pleasure and commercial cars, Corbin and Everitt; Mitchell Agency, Mitchell; Riley Auto Co., E-M-F; Adams & Hart, Oakland, Franklin and Rauch & Lang electrics; W. D. Van-

decar, Stoddard-Dayton, Reo and Owen; Austin Automobile Co., Austin; Elmore Auto Sales Co., Elmore; Palmer Sales Co., Peerless; W. S. Farrant, Chalmers and Columbus electrics; D. C. Rieckse Auto Co., Cutting and Cartecar; Central Auto Co., Cadillac and Waverley electrics; Fred Z. Pantlin, Oldsmobile and Lozier; Sterling Auto Sales Co., Sterling and Crow; International Harvester Co., International.

Motorcycles: Verwys Bros., Thor; Joseph Poisson, Indian and Minneapolis; Heth Bros., Excelsior.

New York's Governor Inaugurates the Show in Binghamton

The Binghamton show, which occupied the State armory, and was promoted by the Binghamton (N. Y.) Automobile Dealers' Association, was opened by Governor Dix on Saturday evening last, 18th inst., and held the boards for a full week. The show was slightly smaller than the pre-

vious one, numbering but 32 exhibitors, of whom 19 show cars and 13 accessories and motorcycles, as against 38 exhibitors last year, of whom 30 had that number of different brands of cars on view.

The big building was prettily decked out, the principal feature of the decorations

being long garlands of incandescent and arc lights, which, alternated with festoons of colored bunting, formed the "sky" and transformed the extemporized show room into a palace of light. The complete list of the exhibitors and the wares they showed are as follows:

W. H. Wilcox, Marion; Doherty & Buchanan, Stoddard-Dayton; Howard Brown, Buick, Thomas, Regal and Pope-Hartford; Binghamton Cadillac Co., Cadillac; Davidge Motor Car Co., Pierce-Arrow; Mrs. F. H. Foote, Detroit electrics; June Automobile Co., Mitchell, Chalmers-Detroit and Brush; R. W. Whipple, Packard; Stow Mfg. Co., Knox, Everitt and Hupmobile; S. H. Lewis, Maxwell, Frank-

lin and Columbia; Douglas J. Ashley, Palmer & Singer; New York Sales Co., Hudson and Rambler; S. B. Judd, Overland and Oldsmobile; Binghamton Ford Sales Co., Ford; Hess-Lowell-Hammond Co., E-M-F, Flanders, Winton and Pullman; C. E. Prentice, Metz; F. D. Edwards, Corbin; W. A. Crandall, White gasoline; M. E. Dykeman, Babcock electrics.

Motorcycles: F. S. Bump Co., Racycle

and Indian; Burton E. Jewell, Excelsior; Parlor City Electric Co., New Era; Walter C. Merrick, Yale; H. C. Emmons, Reliance; W. H. Wolfe, Pierce and Harley-Davidson; Wm. Brown, Marsh-Metz and Haverford.

Accessories: Tiona Oil Co., Standard Oil Co., Newell H. Snow, Binghamton Automobile Academy, Binghamton Vulcanizing Co., S. H. Lewis.



THE "FOUNTAIN OF ROSES" THAT GRACED THE RECENT MEMPHIS (TENN.) SHOW

Sport and Carnival Spirit Mingle With the New Orleans Show

Coincident with the annual Mardi Gras celebration and racemeet in New Orleans, the first annual show of the New Orleans Automobile Club was opened on the 24th ult. in the grandstand building at the Fair Grounds race track and was closed three days later. While the show really was a "sure enough" automobile show, it also smacked of the county fair, owing to the presence of several industrial exhibits and a display of motor boats and marine engines. Boxwood and bay trees and a plenitude of ferns and other verdure helped to make the improvised show room attractive, and a fair crowd usually was in attendance during the four days.

Of the 40 makes of cars which were dis-

played, included in which figure were three brands of trucks, only one was new in the sense that it had not until then been seen at any of the local shows. The Marathon is the car referred to, and it is a strictly Southern product, hailing from Nashville, Tenn., where it is made by the Southern Motor Works. The motor is nominally rated at 35 horsepower and has cylinders $4\frac{1}{4} \times 4\frac{1}{2}$, cast in pairs. Several body styles are listed, any one of which the purchaser may have at his option. The remainder of the exhibitors were as follows:

Oster Bros., Moon; International Harvester Co., International; Southern Vehicle Co., Brush and Mitchell; Southern Motor Works, Marathon; Gus D. Revols, Oldsmo-

bile; A. J. Wahl, Inter-State; J. I. Case Co., Case; Abner Powell, White and Hupmobile; John Deere Plow Co., Jackson; Jos. Schwartz Co., Buick; A. L. Ducote, E-M-F and Flanders; Southern Vehicle & Auto Co., Lozier and Waverley electrics; Cooke Auto & Taxi Cab Co., Locomobile; Ascheffenberg Motor Car Co., Fiat, Woods electrics and Kelly trucks; Russel Motor Car Co., Ford and Warren-Detroits; Fairchild Auto Co., Peerless, Winton, Marion, Rauch & Lang electrics and Rapid trucks; Crescent City Auto Co., Chalmers, Thomas and Hudson; Lyons-Barton Motor Car Co., Pierce-Arrow; Louisiana Motor Car Co., Stearns; Oliver B. Brown, Stevens-Duryea and Overland; Abbott Automobile Co.,

Packard pleasure and commercial cars and Baker electrics; H. A. Testard, Cadillac; Myatt-Dicks Motor Car Co., Marmon;

Demack Motor Car Co., Knox pleasure cars. Accessories: Automobile Tire Co., Wagner Tank & Pump Co., Keystone Lubri-

cating Co., Jos. Schwartz Co., Chas. E. Miller, Schuler Rubber & Supply Co., Standard Oil Co., Abbott Auto Co.

Opening Crush at Omaha Caused Doors to be Closed

Automobile shows are far from new in Omaha, Neb. The sixth annual function of this kind was closed on the 25th ult. after a week's run in the Auditorium that was unprecedented, from the point of attendance and splendor, in the history of the Omaha Automobile Dealers' Association's five previous efforts. In fact the crowds were so great on the opening night that the doors had to be closed for a time and a number of the visitors left out in the cold.

The color scheme of green and white and the brilliant lighting effect gave the interior of the old building an entirely new aspect and elicited admiration on all sides. The roof and sides of the hall were covered by a colored canopy, except for a few balcony seats left unencumbered that visitors might view the exhibition from above. The railings separating the booths were built on the old colonial style of interior decorating, and each space boasted a green carpet. The main posts, by which the lighting effects were supported, were built in mission style and blended well with the colonial effect otherwise obtained. Long strings of incandescent bulbs, supplemented by arc lights, served as the illuminatives.

A newcomer uncovered was the Rogers, the product of the Rogers Motor Co., of



HAGSTROM EXHIBIT AT WESTERN SHOWS

Ralston, Neb., which is a suburb of Omaha. Though the cars have been on the market for almost a year this is the first time they have been exhibited. A roadster and a surrey are included in the line which is further rounded out by a light delivery wagon, one chassis serving for all three bodies. The motor is two cylinder opposed and air cooled, and the transmission is by friction and double side chains. The following makes of cars were shown by their respective agents:

Pleasure cars: Apperson, Case, Cadillac, Velie, Locomobile, Stoddard-Dayton, Waverley electric, Packard, Rauch & Lang and Baker electrics, E-M-F, Flanders, Ford, Chalmers, Hudson, Pierce-Arrow, Thomas, Midland, Hupmobile, Glide, Hupp-Yeats, International, Inter-State, Stevens-Duryea, Stanley steamer, Reo, Babcock electrics, Kissel, Oakland Staver-Chicago, Marion, Ohio electric, Maytag-Mason, Mitchell, National, Buick, Oldsmobile, Brush, Auburn, Cartecar, Rambler, Alco, Franklin, Peerless, Columbia, Maxwell, Overland, Pope-Hartford, Stearns and Lexington.

Commercial cars: Packard, Avery, Maytag, Kelly, Randolph, Buick, Brush, Atterbury, Rogers, Franklin and Sampson.

Indianapolis's "Show" Quite Unlike All Other Local Displays

As was the case last year, the Indianapolis "show," which was auspiciously inaugurated on Monday last, 27th ult., is more like a monster "at home" carnival than an industrial exhibition, for, while other shows have been staged as a whole in one or two big public buildings, the Indianapolis function is being held all over the city, which is to say that each dealer has decorated his own show room for the occasion and is holding "open house" throughout the week. Everywhere, all over the city, the automobile establishments are attractively dressed with flags and colored bunting and flowers galore, and the visitors wander in and out from early morning till late at night. Of

course no admission was charged and sight-seers were quick to appreciate this feature.

A big carnival parade composed of gaily decorated automobiles and grotesque and statuesque "floats" chugged its way through the streets on Tuesday night with roman candles spouting and mid the glare of red and green fire. A military band, mounted on a Reliance truck, headed the pageant, and right behind it lumbered the "chariot" of the King and Queen, the said chariot consisting of a Pierce-Arrow landaulet. The king, who on less eventful occasions is Will H. Brown, vice-president of the Willys-Overland Co., was elected by newspaper vote, as was the queen, personated

by Miss Helen Donson. They wore not regal robes, but conventional evening garb.

Wednesday was styled "Legislators' day" and members of the Indianapolis legislature were made especially welcome at the various stores. Today (Thursday) will be devoted to contests on the speedway. There will be apple spearing, fancy driving contests, egg and spoon races and any number of equally diverting amusements. On Friday there will be another big parade, but one devoted wholly to commercial vehicles. The festivities will be brought to a close on Saturday night with a banquet which is to be given by the Automobile Trade Association at the Denison hotel.

New Jersey Assembly for Reciprocity.

The effort to make New Jersey an integral part of the United States again was made in the New Jersey legislature—this time in the Assembly—on Monday last, 27th inst., when the Brackett bill providing for automobile reciprocity with other states, was brought up for passage. The bill is akin to the Edge measure recently defeated in the Senate, and seeks to give non-residents 15 days free travel. It was debated at great length until nearly midnight and

then was beaten by a vote of 26 to 18, a number of its friends being absent. When it was apparent that the bill was lost, Assemblyman McCran changed his vote from "Aye" to "Nay" in order to move for reconsideration. This he did the next day, when its supporters being present in force it passed by a safe majority, 37 to 18. Before it can become a law, however, it must be adopted by the Senate, where that insurance farmer, Joe Frelinghuysen, and Gentleman Leavitt who with true sena-

torial dignity is said to have described automobilists as a "bunch of highbinders," abide and where its chance of passage is slim. Last year the assembly passed a similar measure which promptly was killed in the senate.

What is said to be the largest rubber plantation in the world is located in the Department of Soconusco, Mexico. It contains twenty-nine square miles and seven million trees.

TO REDUCE CONSUMPTION OF FUEL

Cleveland Inventors Develop a Carburettor Attachment for the Purpose—Its Ingenuity and How It Operates.

To secure correct carburation of the gasoline is a problem over which many prolific inventors have stumbled, some of them perfecting or improving either original or old ideas of carburettors, generator valves and mixers of one sort or another, and others but adding to the number of instruments which "eat" gasoline and do little else. It is very apparent to many that the number of revolutions per gallon of gasoline consumed by the motor is not what it should be; anyway it was apparent to the Bingham Manufacturing Co., of Cleveland, O., which just has placed on the market the Bingham Compensator, a regulator designed to reduce gasoline consumption by reducing the pressure in the float chamber in proportion to the reduction of pressure at the jet.

This device, which easily can be attached to any make of carburettor, is comprised of a manifold with three connections, as shown in the accompanying illustration, the admissions to which are regulated by three valves. The connections are located as follows: One from the valve to the intake pipe above the throttle; one to the air passage below the throttle, and one to the float chamber. The air vent on the carburettor itself is sealed by an air tight cap and as soon as equilibrium is established, an orifice, shown under the position of the center valve, prevents gagging by allowing a slight amount of air to flow through.

The influence of the variation of suction caused by the load or speed has a great deal to do with the economical consumption of gasoline. As an illustration, take a motor running 1,200 revolutions per minute. This speed causes a reduction of pressure which in turn causes the volume of gasoline to flow out of the spray jet at a certain height, which is determined by reduction of pressure at the jet. The column rises not only in proportion to the reduction at the jet but in proportion to the atmospheric pressure in the float chamber, which at sea level is 14.7 pounds and which pressure is reduced in proportion to the elevation.

When the throttle of the ordinary carburettor is closed, or the motor slowed down by its load, the pressure at the jet increases, but in the float chamber it remains constant. Therefore the column of gasoline drops in height but not in proportion to the reduction in speed. With the Bingham compensating attachment when the throttle is closed suddenly the pressure in the mixing chamber is normal and that in the intake pipe is less than normal, so that air flows into the intake pipe

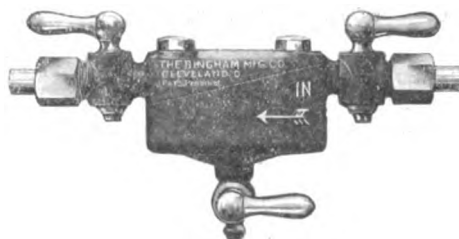
through the connection leading around from the base of the mixing chamber. Then if the valve on the side leading to the mixing chamber is partly closed and the valve from the float chamber to the intake pipe open, this would tend to reduce the pressure in the float chamber, thus counteracting any tendency of the fuel to spurt.

When the throttle of the ordinary carburettor is opened suddenly, the mixing chamber has pressure below normal and the float chamber pressure is normal. This



THE BINGHAM COMPENSATOR

is practically the same as the running condition except that the inertia causes the fuel in the jet to "lag," leaving a "weak spot" or layer in the column of gas that first flows through the intake pipe; and then to spurt, giving an "over-rich spot." With the compensator attached to the carburettor and under the above conditions with suddenly opened throttle, the pressure in the mixing and in the intake chambers is below normal, as also is that in the two



THE SURECLEAN STRAINER

tubes leading from this regulator to these chambers. However, the friction in the tubes and the throttling of the valve on tube leading to the intake pipe, tend to cause a temporary flow through the tube from the float chamber to the intake pipe, overcoming the tendency to spurt.

By the same equalization of pressure in the various chambers the tendency to spurt is overcome when the throttle is held in any other position. The above relations hold true both for low or high speeds, the only difference being that the respective negative pressures are greater at high than at low speeds, so that the amount of air displaced through the regulator will be greater.

Another device for use in the fuel line, also manufactured by the Bingham company, is one styled the "Shureclean" strainer. It is provided with three pet-

cocks, as the accompanying illustration shows, one for cutting off the gasoline from the tank to the strainer, a second for closing the flow from the strainer to the carburettor, and the third at the bottom for flushing. A screen is held in place by the intersection of the top and bottom parts of the manifold, and as the gasoline passes into the carburettor all dirt is deposited below the screen. The feature of the strainer is that it never need be taken apart to clean, all that is necessary for this operation being to open the pet-cock on the carburettor sides, the gasoline from the float chamber running back through the screen, washes off all sediment which is drained off through the lower pet-cock.

Self-Starters Are Offered to All.

Automobile manufacturers who are interested in engine starting devices but who are not developing systems of their own, are offered an opportunity to adopt a self-starter by the expansion of the Gardner Engine Starter Co., of Chicago, Ill., originator of the Gardner starter. This arrangement is of the spring-actuated type and is designed to be embodied in the gear box of any shaft driven car. The spring is wound automatically, the winding mechanism being so contrived that when the spring is set for starting the mechanism itself acts as a supplementary transmission brake. The Gardner company is building the starter (which weighs less than 50 pounds for medium sized cars) for Ford and Franklin cars. It also is prepared to dispose of shop rights and blue prints enabling others to use the system.

Special System for Loading Shoes.

With the object of facilitating loading and unloading operations, the Boston Rubber Shoe Co., of New York City, has adopted a unique system of motor truck construction in which demountable sectional loading units replace the usual body. The system having proved successful after experimental use, a second two-ton truck has been ordered from the maker, which is the Lansden Co., of Newark, N. J. Instead of the usual body, the chassis is fitted with three rails and the load is carried in three large boxes, each of which is mounted on small wheels of its own which run on the rails of the truck. The boxes are trundled about the factory floors in picking up their loads and then are pushed directly on the automobile.

Condensation that Causes Trouble.

When taking out a car that has been standing unused for some little time during cold weather, trouble is apt to be experienced from the condensation of moisture in the gasoline piping and consequent carburettor derangement. The remedy, of course, is to close the outlet from the tank and drain the piping and float chamber through the petcock below the strainer.

Modern Developments of the Ancient Gas Turbine

Ordinarily the turbine form of heat engine is regarded as being one of the novelties of the age. The steam turbine, for example, ranks with wireless telegraphy and the automobile among modern marvels, and the gas turbine, like aerial flight and mono-rail transportation, is looked upon as one of the "coming" marvels of next year or the next. But as a matter of fact the concept of the turbine is very old, older than that of the reciprocating engine of the present day, in fact, if the steam pin-wheel, which all encyclopedias perpetuate is recalled. For that was invented by Hero of Alexandria, who died in 221 B. C. The turbine, even as understood at the present time, however, dates back much further than commonly is supposed, first having been conceived as far back as 1791.

And lest there be any question of the authenticity of this "anticipation" of present day ideals, be it further explained that at that time a prudent and far-sighted Briton, whose deed has outlived his name as far as the general public is concerned, went and got a patent on his idea which thus has been perpetuated. And the idea, as expressed in the early specifications, seems to have antedated many of the more recent inventions along the same line. It provided for "retorts for the distillation of coal or wood, the gas being pumped, after cooling, into a combustion chamber, another pump delivered air and water vapor into the combustion chamber, and the products of combustion were discharged upon the buckets of a wheel running at a high speed, a train of gearing driving the power shaft and operating the pumps."

The description is quoted from a discussion of the gas turbine recently presented before the Coventry branch of the Graduates' Section of the Incorporated Institution of Automobile Engineers, of England, by H. Grinstead. Hitherto most of the information concerning the gas turbine which has found its way into print has been of the highly technical—and, therefore, not readily understandable—sort. But the authority in question has performed a lasting service to the "man in the street" by elucidating some of the principles of the more promising types of turbine that have been constructed.

The steam turbine, as generally is understood, has progressed to a point of wonderful efficiency, though its more recent development has been along lines totally different from those it had been expected to follow. That is to say, instead of coming into use as an independent prime mover, the larger installations in which turbines are being used at the present time are of the

combined reciprocating-turbo variety. To abridge a great deal of theory, it is sufficient to explain in this connection that better economy has been developed under certain conditions by using reciprocating engines of the compound pattern and employing the exhaust steam from them in

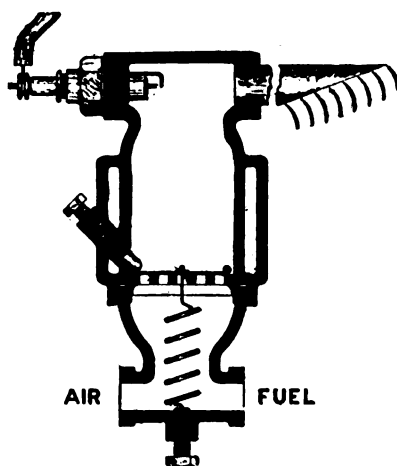


FIG. 1.

turbines, than could be achieved by using high pressure steam directly in the turbines. Under certain conditions which are of a special nature, the turbine is found to perform satisfactorily when used alone.

The development of the gas turbine has been considerably retarded, however, and despite the labors of a great number of inventors its status still remains largely that of a hopeful prospect. Of the various difficulties encountered, the most important is that of the high temperatures to be dealt

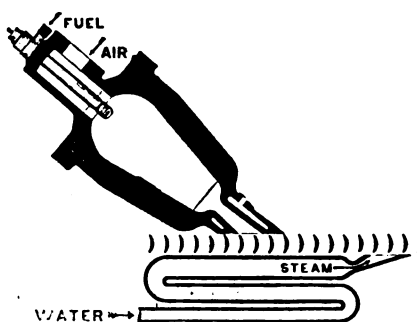


FIG. 2.

with. Another, and one for which only the empirical solution of long-continued experiment seems possible, is that of the proper arrangement for the nozzles, which are subject to somewhat different conditions from those obtaining in the steam turbine. Furthermore, even when expanded to very low pressures, the exhaust gases retain considerable heat, the loss of which

seriously impairs the efficiency of the engine. Still another point, and one with which the gas turbine engineer has not yet had to grapple as seriously as with other difficulties, is that of the erosion of the blades of the wheel—a difficulty which in steam turbine practice has proved not inconsiderable. Despite these obstacles, however, considerable has been accomplished already, and not a few inventors are wrestling with the problem in the hope of attaining an ultimate result that shall be of benefit to the automobile industry among others.

In demonstrating the fundamental principle of the turbine, the authority above mentioned explains that in the ordinary reciprocating engine there are two very undesirable qualities which are unavoidable. These are:

"Firstly, discontinuity of torque, causing speed variations and necessitating the use of heavy fly wheels; and, secondly, the effects, both external and internal, of heavy reciprocating masses. And it is with the idea of producing a machine without these effects," he continues, "that the gas turbine problem must be approached."

"The basic principles of all internal combustion engines, both reciprocating and turbine, are identically the same—heat evolved by the burning of the fuel is given to the gaseous products of combustion, which are then allowed to expand in such a way that work is done at the expense of the heat energy derived from the fuel."

"In a reciprocating engine the action is clearly seen, the heat of combustion raising the pressure and temperature of the charge behind the piston, which is pushed outwards, causing the crank shaft to rotate."

"In the turbine the products of combustion receive the heat from the fuel, but instead of expanding behind a piston, the gases flow from a vessel at one pressure to another in which the pressure is lower, the drop in pressure being expended in giving the gases velocity. While moving at a high velocity the gases are made to impinge upon the blades of a turbine wheel, to which they give up some of their energy, causing it to rotate."

As in the reciprocating form of engine, the combustion may occur in either of two ways, that is to say, at constant volume or constant pressure. In the former case, the gas usually is subjected to compression as a means of increasing the efficiency of the cycle, and the rapidity of the resulting combustion is so great as to warrant the use of the term explosion in this connection. In the constant pressure type of engine the fuel is fed into the combustion

chamber and burned simultaneously, the action corresponding to that resulting in the fuel-injection type of reciprocating engine.

Reverting to the practical side of gas turbine work, Grinsted explains that in 1850 a patent was granted for a mixed steam and gas turbine, in which fuel was burnt on a grate, to which air was supplied under pressure, and water was sprayed from a pipe above the fire, the mixture of steam and gas being delivered through a nozzle upon a wheel. He continues:

"In a communication to the French Academy of Science in 1853, the whole question of gas and steam turbines and rotary compressors is discussed in a remarkably clear manner, and it seems that only constructive difficulties prevented the immediate practical realization of the machines described. In 1864 an induced jet arrangement was patented whereby the high velocity and temperature of the jet of gases could be reduced and its volume increased. The inventor also proposed a form of combustion chamber to generate a mixture of steam and gases to be used as the working fluid in a turbine.

"In 1872 a patent for a hot-air turbine was applied for in Prussia; it was practically the same as that described in 1853 in the communication to the French Academy of Science: air compressed in a rotary compressor attached to the main shaft passed through a heating chamber, where it derived energy, which it then gave up in the power turbine. Both Parsons and Laval had in their minds the use of hot gases as well as steam when at work on their respective steam turbines, as the wording of their patent specifications shows."

With regard to the practical methods employed in securing turbine action the Karavodine design, which was developed in Paris and described as recently as 1909, is instanced. The scheme of the explosion chamber is illustrated in the accompanying Fig. 1. But while the machine in question was made to run successfully, its power was not excessive, to put it mildly, nor was its economy startlingly high. As a matter of fact, when turning at the rate of 10,000 revolutions per minute it gave only 1.6 horsepower with a fuel consumption of 5.6 pounds of gasolene per indicated horsepower hour. It should be mentioned, however, that the machine was very small, the wheel being only about 6 inches in diameter, while the combustion chamber had a volume of only about 14 cubic inches, or exactly 230 cubic centimeters. The nozzle consisted of a tube 3 meters long and 16 millimeters in diameter.

The action of the explosion chamber was entirely automatic, rendering about 40 explosions per second. As the illustration shows, the chamber is closed at one end by a valve of large diameter, which is held to its seat by means of a light spring. At

the other end are the outlet to the nozzle and the spark plug.

In action, a charge of mingled gas and air being drawn into the chamber is ignited by means of the spark, its force serving to close the inlet valve. The burned gases

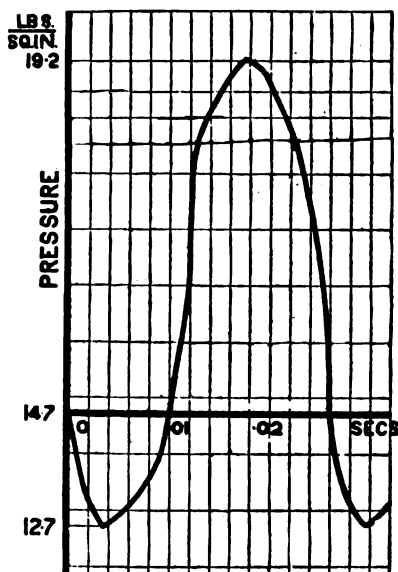
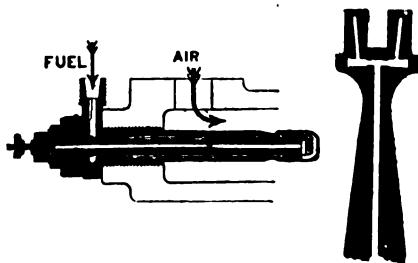


FIG. 3

are driven out through the nozzle by expansion, impinging against the wheel, which is not shown in the illustration, which thereby is made to rotate. Owing to the inertia of the outflowing gases a partial vacuum is formed in the combustion chamber, which is sufficient to cause a new charge to be drawn into the chamber, when the action is repeated. In the Karavodine turbine four nozzles were employed, the wheel being of the Laval type, owing to the rapidity of the explosions and the choking effect of the nozzles the discharge was practically continuous.

The accompanying Fig. 2 shows the pressure variations in the chamber when in action and also indicates the pressure



FIGS. 4 AND 5

range attained. The mean effective pressure throughout the cycle, it may be added, was found to be about $16\frac{1}{4}$ pounds per square inch.

A larger and much more successful form of turbine, which in actual practice develops about 300 horsepower with a fuel consumption of 2.65 to 2.87 pounds per horsepower hour, though at relatively low efficiency, also is described by Grinsted. This

machine is remarkable in that it is of the constant pressure type. The arrangement of the combustion chamber employed is shown roughly in Fig. 3.

"The outer shell is of cast iron, the lining being of carborundum," says the authority in question; "an elastic non-conducting lining of asbestos is placed between the carborundum and the iron shell to provide a bedding for the carborundum and to allow for differences in expansion and contraction. The nozzle is also lined with carborundum, not shown in the diagram, this material being found the most suitable to withstand the high temperature and erosive action of the gases.

"The fuel is admitted by an astonishing nozzle shown in section in Fig. 3. The petrol or other liquid flows under pressure along the annular duct, and is ejected from the reverse annular opening in a conical spray, which mets the stream of incoming air, causing the liquid to be completely atomized and thoroughly mixed with the air.

"The atomizer is protected from the intense radiant heat of the chamber by the current of air by which it is constantly surrounded. The coil of platinum wire at the tip of the atomizer is used for ignition of the fuel when starting, and is protected from the radiant heat of the chamber by a steel cap. A pressure of two volts only is used, so the rod passing through the center of the pulverizer to the igniter does not need much insulation.

"The air supply is furnished by a Rateau multi-cellular rotary compressor composed of a number of turbo-blowers arranged in series like a Parsons turbine reversed; it was specially designed to run at high speeds, so that it could be directly coupled to the gas turbine. This compressor will deliver air at 112 pounds per square inch with an efficiency of about 65 per cent. The compressor was found to absorb about one-half the total power developed by the turbine. . . .

"The high temperature of the gases necessitated some arrangements for cooling. The diagram, Fig. 4, shows one method of cooling the wheel. A form of flash boiler is placed in the passage of the exhaust, the steam generated being directed upon the wheel, so that the vanes pass under it immediately after receiving the hot gases. The gases themselves can be partially cooled by injecting water at the entrance to the nozzle. Another diagram, Fig. 5, shows the method of cooling the rotor by a system of water passages, automatic circulation being obtained by the action of centrifugal force.

"A form of combustion turbine has been used for propelling torpedoes for the brief period between leaving the tube and contact with the target. Compressed air from a reservoir passes through a combustion chamber, where it burns a jet of petrol, the chamber also acting as a steam boiler,

and the steam and the products of combustion acting upon a turbine wheel. The power developed is about 120 horsepower at 1,000 revolutions per minute. The weight of the turbine alone is 1.3 pounds per horsepower; the weight of the whole apparatus, with air and petrol sufficient for discharge lasting 80 seconds, is about 5.5 pounds per horsepower."

The outcome of his researches apparently does not warrant the British engineer in taking a very hopeful view of the future of the gas turbine, particularly with respect to its probable utility in automobile service. While these opinions are not shared by all students of turbine construction, they are none the less interesting.

"On account of the high temperature of the gases multi-stage pressure turbines cannot be used," in his belief, "but a nozzle must be employed to expand the gases down to atmospheric pressure and the corresponding temperature, so that external wasteful cooling may be avoided as far as possible. . . .

"As it is impossible to work condensing, it is essential, for high efficiency, that the gases should be expanded to as low a temperature as possible, and it appears that large improvements in nozzle efficiency must be made before the turbine can compete in efficiency with the reciprocating engine.

"The only advantage to be obtained by the use of the turbine for car propulsion would be freedom from vibration. The gear box would still be necessary unless replaced by electrical transmission, which cannot be said to have yet attained very great success on the ordinary touring car. The turbine would have to run at a very high speed, and its hum and the noise of its reducing gear, which would probably be necessary, would not be tolerated after the silence of the modern car engine. The gas turbine has a field in stationary work, where heavy power is required, but before it can make much headway, it must show an efficiency which will bear comparison with the reciprocating gas engine and steam turbine."

Suggests Motor Service for Tonkin.

The practicability of a motor carriage parcels, freight and passenger service between Lung-Chow, on the Li river, and Namkivan, on the Tonkin frontier, the terminus of the French railway, has been suggested by the commissioner of customs at Lung-Chow. Leo Bergholz, the American consul at Canton, says that this district is one of the most densely populated and prosperous in the Empire, and adds that it is the commissioner's opinion that, geographically, nothing stands in the way of the suggested service, and that, economically, it should prove a benefit to its patrons and a profit to its promoters, for the reason that transportation facilities of any kind are sadly lacking.

WHY CARS SOMETIMES "BLOW UP"

Carelessness in Magneto and Carburetter Mounting Held Accountable—Precautions that May Reduce the Risk.

Ordinarily it is considered that no better form of insulation can be secured for an electric current than to isolate its conductor by at least a quarter of an inch of dry air. But where the current employed is of the high tension variety and when the conductor is so located that instead of dry, pure air it may be surrounded by a highly inflammable gas there are times when even a quarter of an inch is insufficient for safety. For example, if consideration for the convenience of the operator leads the designer of an automobile to mount the magneto in such a way that the high tension spark plug wires come within a quarter inch of the intake pipe it is possible to imagine circumstances that would render the arrangement extremely hazardous. Yet, strange as it may seem, there are a number of cars on the American market at the present time in which just such a flint and tinder combination has been boldly arranged by the manufacturer. That the danger involved in the placing of magneto and carburetter in too close proximity is not entirely fancied is explained by the actual experience of one motorist, which recently found its way into print.

"After flooding the carburetter of my car and attempting to start on the dual ignition self-starter flames suddenly burst from the bonnet, starting from the region of the carburetter," he relates. "For some time I was at a loss to account for the cause of this outbreak, and after some correspondence with the makers of the car and the makers of the magneto, the cause was decided to have been due to a spark jumping from the adjacent terminal of the magneto to the gun metal float chamber, which was overflowing, or damp with gasoline. I had had the car in use for some little time, so that it is evident that the fact that an outbreak does not occur at once does not prove that the danger is not potential on many cars in use at the present time, on which no trouble has been experienced in this way."

On the well-recognized principle that "it takes two to make a quarrel," it might be considered unjust to assert that the mere placing of the magneto close to the carburetter renders the car in any way dangerous to drive or liable to take fire on unexpected occasions. And it is perfectly true that such an arrangement is not necessarily dangerous. That it is the part of wisdom to place the carburetter and magneto on opposite sides of the engine, however, is the opinion of the German authorities, who make that one of the necessary provisions

of the local registration requirements.

As revealing the variety of methods which exist and also bearing directly on the question of fire risk, which may be involved, the result of a special census of the first week of the recent show in Madison Square Garden, New York, proved fruitful. Out of 60 cars examined 26, or just 44 per cent. had the magneto and carburetter mounted on the same side of the engine. Of these both magneto and carburetter were mounted on the left side, while in 19 the two were mounted on the right. The favorite method of arrangement, as far as the actual majority goes, however, is that in which the carburetter is placed on the right and the magneto on the left, 21 cars being thus equipped. In a dozen instances the same arrangement was found, but in the reverse order, the carburetter being on the left and the magneto on the right. Thus the totals reveal a majority of 33 types, or 56 per cent., in which the carburetter and magneto are placed on opposite sides of the engine.

Notwithstanding the fact that in a very large majority of instances manufacturers are taking what may be termed reasonable precautions to safeguard their products against the fire risk, several cases may be noted in which absolutely no attention had been paid to the lively possibilities involved in bringing flint and tinder into close proximity, even when the steel is not supposed to be present. To define the potential danger, it is only necessary to indicate some of the erratic tendencies of both ignition and carburetting devices.

In the case of the magneto, for example, it is perfectly true that all circuit-breaking and distributing devices are properly housed, that conductors are properly insulated under normal conditions, and that under ordinary circumstances no sparks whatever should occur externally, and practically none within the contact-breaker casing. As against these probabilities, however, must be contrasted the possibilities that the timer and distributor covers may become loosened and drop off inadvertently, that insulation on high tension conductors may become chafed, cut, or broken down through becoming oil or water soaked, that disarranged contact-breakers and distributors frequently do emit sparks, and last but not least, that although a magneto may be so mounted as to secure perfect air insulation between high tension terminals and adjacent metal surfaces, the possibility of loose parts dropping in between or of the air gap being reduced below the safe point through the weaving of the frame under usage always must be taken into account. In other words, despite the natural precautions of the ignition specialty builder to prevent the straying of high potential currents or the external conduction of such currents there are times when such leakages are likely to be generated within the magneto itself.

To carry the point a little further, there is one real danger point, so far as the present consideration is concerned, in a large proportion of modern magnetos, particularly in those of the dual type, that is the external terminal through which connection is made to the starting switch on the dash. Normally, of course, this terminal and the connected conductor, carry only low-tension current. But it must be borne in mind that with the use of one or more condensers in the low-tension circuits there always is a certain amount of static or "capacity" discharge, which is both high potential and high frequency in character. There also is a certain tendency to static inductive effects throughout the entire ignition system, which, while negligible under ordinary circumstances, may become sufficient to cause puzzling difficulties at times, and even stray sparks. The tendency to such effects, it is well to remember, is most lively at the instant of starting.

Very much as is the case with the magneto the carburetter ordinarily evidences no unpleasant tendencies. At the same time there are combinations of circumstances which render it far from a safe device to carry in close quarters with a source of sparks. Thus a poorly adjusted float valve usually manifests itself by the dripping of fuel from the open port of the main air intake, a back-fire which is insufficient to cause the gas in the mixing chamber to ignite often causes a puff of the mixture to be ejected through the same opening, while under certain circumstances the popping of the carburetter may cause a fine spray of unvaporized fuel to be thrown out of either the main or auxiliary air valves.

One more point should be taken into consideration in connection with the "tinder" element of the risk, i. e., the habit of the average chauffeur to "flood" his carburetter until fuel drips from the mixing chamber before attempting to start his engine. This habit, coupled with the slopping proclivities of certain designs of carburetter, tends to cause the formation of more or less gasoline vapor in the immediate vicinity of the carburetter. And again, it is to be noted that the formation of such vapor is most likely to occur just at the instant of starting, or—in the case of a leaking float valve—at least after the engine has been standing for some time.

Thus it is evident that despite the fact that ordinarily the magneto is inert as far as external sparking is concerned, and the carburetter equally innocent of external vapor, there are times when both may give offense in these vital respects. If they happen to be mounted close together, it also is possible that the coincidence of the symptoms may be the cause of a more or less serious fire under the bonnet of the car.

Happily one very important safeguard is

automatically provided in many cases. That safeguard is ventilation. Where the bonnet is tightly closed and a fan is used, either in the fly wheel or behind the radiator, it is practically certain that a fair circulation of air is constantly taking place whenever the engine is running. This in itself provides against the accumulation of inflammable vapor in the vicinity of the carburetter ordinarily. It does not provide against the formation of such vapors when the engine is at rest, however, but rather to the contrary, as the sudden inrush of pure air when the engine is just beginning to turn may have the effect of agitating and rendering combustible any vapors that may have been formed during an idle interval.

Where ventilation otherwise might be a means of safeguard, however, certain automobile designers have inadvertently forestalled the possibility by the very nature of the engine construction employed. With a number of different styles of car it is customary to fill in the space between the crank case and the main or sub-frame, either by webbing the upper section of the crank case outwardly to the frame for purposes of rigidity or by the use of light metal filler strips, which serve the purpose of a sod pan. The immediate effect is to form a series of pockets between the engine supporting arms, from which there is no sort of outlet to the underside of the car. In only a few instances where this condition exists have the designers taken the precaution to provide open drains to carry away any liquid fuel that might drip from the carburetter.

Again referring to actual practice as revealed at the show, by all odds the worst example of careless construction in this respect was observed on a high-powered car that enjoys a reputation for thorough workmanship and construction and that commands a very high price. In this particular machine the upper crank case casting is carried out to the side frame member to form a solid pan from end to end of the motor, while upward extending webs or fins serve to partition off several pockets on either side of the cylinders. It may be added that, as the engine is a large one and the bonnet rather low, the air draught through the radiator is carried in an unbroken stream-line over and around the cylinders and down beneath the dash. A short intake lead and large diameter manifold on the right side combine to raise the carburetter to rather a high level on this particular machine, while the magneto, which is mounted rather low in order to take advantage of a straight line drive from the gears at the front of the engine, is placed further to the rear than is common practice. The result is that the distributor end of the magneto comes immediately under the extra air valve of the carburetter, which projects to one side of the mixing chamber, the distance between

the low-speed spring adjusting nut and the top of the distributor housing is a bare half inch. In consequence there is strong likelihood that in the event of any disarrangement of the magneto that might cause external sparks a fire would occur, as no sort of drainage is provided for the carburetter, while, as already indicated, there is no sort of draught to take care of any possible accumulation of combustible vapor in the vicinity of the carburetter.

In another machine, which otherwise is well designed and bears a good reputation for consistent work, the magneto and carburetter are placed close together on the left side, but with ample clearance between. In this case, however, carelessness in arranging the ignition wiring is responsible for the trailing of the high tension leads to the spark plugs directly around the mixing chamber and against the underside of the inlet manifold. Chafing of the wires, resulting in the wearing away of the insulation, at any time might cause the high tension current to ground, with considerable possibilities of a spark occurring immediately beside the carburetter. In at least two instances less than a quarter-inch space is provided between the carburetter and magneto, while in several others no more than half an inch clearance between magneto and carburetter is provided. In most of the instances of close mounting observed, no special provision was made for draining the carburetter outside the sod pan, or for taking care of such vapor as is bound to accumulate in the vicinity of a carburetter.

These, of course, are exceptional cases. In a majority of cars there is little real danger of fire due to the ignition of stagnant gas by a stray spark from the magneto, yet in several in which the magneto and carburetter are mounted on the same side, such an occurrence might take place in the event of a considerable accumulation of gas, as, for example, when the car had been standing for some time with the float-chamber or feed connection causing a continuous leakage of fuel.

That some provision should be made against such a mishap as that suffered by the motorist whose experience has been mentioned, goes without saying. It is the part of wisdom, of course, for designers to take proper precautions in arranging the auxiliaries of new products to avoid such a difficulty. As for existing cars which seem to be menaced in this way, where the changing of the magneto position is out of the question, it is possible to provide ample drainage for the carburetter by placing a special drip pan below the carburetter with an outlet which runs clear of the sod pan. In addition to this, the provision of a tight leather or metal casing over the magneto is to be recommended, while it goes without saying that all wiring should be secured against chafing and well isolated from metal surfaces.

ONE WHOLE DAY OF ROAD RACING

Panama-Pacific Contests Ended Only by Darkness—How Honors Were Won—Crowd Contributes Excitement.

It was over a dusty course that swung outward through the low-lying foothills and orchards of San Leandro, Cal., that the Panama-Pacific road races which formerly were styled the Portola races but which were this year re-named in deference to the forthcoming Panama-Pacific exposition, were run off on Washington's birthday. The course, which was badly policed as compared with the militia protection which was provided at the last Portola event, was in fair condition, but the dust and the sharp turns at the San Leandro and Hayward ends made the drivers wary and prohibited the fast time which had been anticipated; and the table of times by laps contains enough inconsistencies and impossibilities to destroy its value and render it unfit for publication. Some of the cars were credited with covering the circuit of nearly eleven miles in less than seven minutes.

The three races, a light car race of 98.3 miles, a heavy car event of 152.9 miles and a free-for-all, which was scheduled to go 19 laps or 207.1 miles, but which was called in the 14th lap on account of darkness, were won, as stated briefly in the Motor World last week, by C. Bigelow (Mercer), Charles Merz (National) and Bert Dingley (Pope-Hartford), respectively.

Light frost was in the valleys and the cool of an east wind made little shivers chase each other up and down the spines of the spectators, when, a little after nine o'clock, the light cars were sent away on their 98 miles grind. The race was for cars up to 300 inches displacement, and five cars lined up for the start, Aurandt driving an E-M-F being the first of the quintet to get away. He was quickly followed by Michener (Inter-State), Cooper (Maxwell) and Bigelow (Mercer). O'Brien at the wheel of a Ford was the last to start.

Michener came to grief almost immediately after the start, the loss of part of the Inter-State's carburetter causing his withdrawal before the completion of the first lap. Cooper in the Maxwell lost a great deal of time in the first few laps owing to tire trouble and his chances looked slim. But he kept a-plugging and made a game struggle to catch Bigelow, who had opened up a big gap between his Mercer and the Maxwell, with Aurandt and the E-M-F running second and O'Brien (Ford), third. Near San Lorenzo Junction Cooper let loose a burst of speed which carried him past O'Brien as if the Ford were anchored and succeeded in making up a little ground. Later O'Brien's Ford suffered magneto troubles and, limping around to the grand-

stand, he threw up the sponge in the fifth lap. Aurandt, who up to this time had been "going strong" and had worked up from third place to second, began to have trouble with the E-M-F and shortly afterward he suffered a mishap which put him out of the running.

The contest then narrowed down to a rather one-sided duel between Bigelow and Cooper, with the former a long distance in the lead and the latter pushing his Maxwell to the limit and taking desperate chances to overhaul the flying Mercer. But it was no use; the best Cooper could do was to cut down Bigelow's lead and be satisfied with second place. The winner's time for the nine circuits was 1:42:54, an average for the 98.3 miles of 62.7 miles an hour.

The crowd which had been gradually increasing in size since the start of the light car race, reached its greatest proportions at the time of the start of the race for cars on the 301-600 inches displacement class, and the tribulations of the management increased in like measure. The spectators lined the course on both sides and left a mere lane in the center of the road for the racers. The grand stand made a hit. Choice sets were vended at 50 cents, but a good part of the crowd clambered into the seats without paying and refused to be ejected. Several speculators were caught selling tickets which they did not then have and never would get, and the resulting melee was only eclipsed by the collapse of a section of the grandstand. Luckily no one was hurt, and as everyone was in a joyous holiday mood, difficulties were forgotten in the excitement.

Jack Fleming at the helm of a Pope-Hartford, hero of the 1909 Portola race and a general favorite for first honors, was the first to leave on the 14 laps journey. Turner in an Amplex came next and was closely followed by DePalma in a National with the Apperson driven by Hanshue close behind him. Merz piloted his National under the starting line next and Bert Dingley in the other Pope-Hartford brought up the rear. There was little excitement up to the fifth lap, when Hanshue, who had been driving at a terrific pace, experienced trouble with a leaky gasoline tank and shortly afterward the Apperson caught fire and was almost totally consumed. Needless to say, it was hors de combat, and was soon followed by DePalma's National, which developed engine trouble and had to be retired in the 10th lap. He was then in fourth position, with Fleming leading Merz and Dingley running third.

Up to this lap Fleming had driven an extremely consistent race and still maintained the premier position, from which it seemed impossible to oust him. But in making a sharp turn he ran into a hay bank that had been placed at the turn and lost several minutes before he could get under way again. It was here that Merz in the National passed him and Fleming

was never able to make up the lost time. From the 11th lap to the finish the race was a struggle between the two Pope-Hartford drivers, Fleming and Dingley, and Merz in the National. On the final lap Merz and Fleming came down the home-stretch almost wheel to wheel, with the former slightly in the lead. Soon the Pope driver was seen to creep up on Merz, and when the finish line was reached he had nosed him out by about 10 feet. Fleming made a spectacular finish, but it was all to no purpose, for when the differences in time were figured out it was found that Merz was the winner by 40 seconds from Dingley, who finished third in the order of crossing the tape but who got second place by reason of his later start. Merz's average speed for the 152.9 miles was 66.6 miles an hour, and his total elapsed time, 2:17:20. Dingley's time for the long grind was 2:18, just one minute and 21½ seconds faster than Fleming, who got third place in 2:18:21¾.

An intermission of an hour between the heavy car race and the free-for-all allowed those so inclined to wrestle with the mysteries of the sandwich counters, an unlimited number of which lined the course, and to ponder on the constituents of the coffee which bubbled in the vendor's numerous pots. By this time the sun had come out strongly and the slight chilliness in the air all had been dissipated.

But five starters appeared for the race, both DePalma and Hanshue having been put out of commission the previous event. Bigelow, who drove his Mercer to victory in the light car race, also had been entered, but, believing he stood no chance with the higher power cars, withdrew. Though three of the cars scheduled to start failed to put in appearance their places were taken to a certain extent by the appearance of Wilcox at the wheel of a big six cylinder National, who drove a sensational race until he was eliminated through engine trouble in the second lap.

Fleming, who was slated to have started first, was unable to do so on account of ignition trouble, and it was not till nine minutes later and Wilcox, Merz and Dingley had each made a circuit of the course that he was able to get under way. When he did get off, after having had a battery replaced, he started with a rush that presaged "something doing." Turner in the Amplex came to grief almost immediately after the start and was reported with a damaged wheel before he had completed one circuit of the course. He was heard of no more. For the first two rounds Dingley held the lead, with Merz in the National close behind him, and Wilcox, in the six cylinder National, running third, he having worked up to this position from fourth by furious driving. Fleming, with the other Pope-Hartford, was trailing along behind with a lap between him and the bunch. At the end of the third lap Dingley

MISSIONARY AND HIS MOTOR CAR

How He Uses It for Soul Saving in Philippines—It Operates a Stereopticon Machine, Too.

and Merz still held their respective positions, as did Fleming, who, though a lap behind the leaders, had moved up into third place through the elimination of Wilcox, whose National "lay down" at this time with a cracked piston and was out of the race. In the fourth lap Merz changed places with the Pope driver, owing to a surplus of tire trouble which the latter had, and this position he held up to the end of the ninth round. Merz had his share of tire troubles in the next lap and was forced to relinquish his position to Dingley, who had been driving carefully and was very much engrossed in minding his own business. Fleming was still running in third position, and though he occasionally let out a burst of speed and passed one or the other of the leaders, he was unable to make up the lap which he lost in the get-away.

In the 14th lap the race was called on account of darkness, and racing down toward the finish line Dingley and Merz, who were separated by but a few seconds, both slowed down for a hill at the end of the Foothills boulevard. Merz's stoppage was just enough greater than that of Dingley to allow the latter another lead and to allow Fleming to creep up from the rear. They finished in this order, but it was either man's race up to the last lap and could Fleming have started on even terms with the others another story and of a different kind might have been written. The winner's time for the 163.8 miles was 2:29:30, a rate of 65.7 miles an hour. The summary:

Ninety-eight and three-tenths miles, for cars up to 300 inches displacement—Won by C. Bigelow, Mercer; second, E. Cooper, Maxwell. Time, 1:42:54. Aurandt (E-M-F), O'Brien (Ford) and Michener (Inter-State) also started.

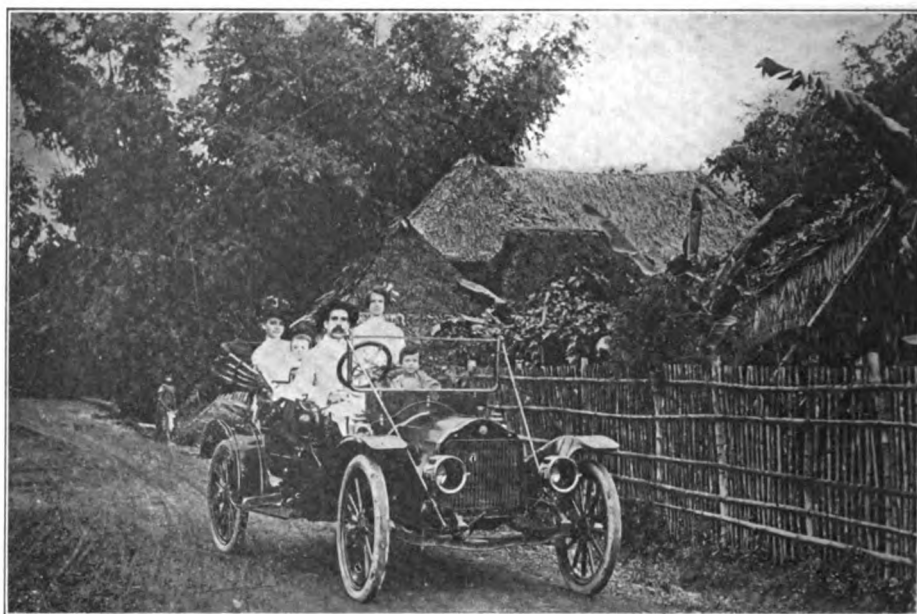
One hundred and fifty-two and nine-tenths miles, for cars from 301 to 600 inches displacement—Won by Charles Merz, National; time, 2:17:20. Second, Bert Dingley, Pope-Hartford; time, 2:18. Third, Jack Fleming, Pope-Hartford; time, 2:18:21½. Turner (Amplex), Ralph DePalma (National) and Harris Hanshue (Apperson) also started.

One hundred and sixty-three and eight-tenths miles, free-for-all—Won by Bert Dingley, Pope-Hartford; time, 2:29:30; second, C. Merz, National; third, Jack Fleming, Pope-Hartford. Wilcox (National) and Turner (Amplex) also started.

To Prevent Breakage of Springs.

Spring breakage occurring at the center of the leaves usually is attributable to the carelessness of the operator in allowing the clips which bind the spring down to the axle to become loose. To safeguard against this difficulty and also to prevent the working of the leaves under the clips it is important to try the binding nuts frequently with a wrench.

The poor, down-trodden missionary long has been the butt for the jokes of his luckier—in their own estimation—fellow beings, the favorite method of depicting one of his many trials and tribulations being by means of a large pot suspended over a glowing fire at which, and the bound vic-



PHILIPPINE MISSIONARY AND HIS FLANDERS 20 CAR

tim, the jubilant cannibals gaze in expectation. The missionary never had a show at all. Of course, while some one or two "sky pilots" may have met this fate, they don't all reach the boiling or broiling stage—at least not in the Philippine Islands where the accompanying photograph of Rev. J. R. McLaughlin, missionary, was taken, Doctor McLaughlin, who is connected with the American Bible Society, not only has a "show" but it is a show in the literal sense of the word, and consists of a stereopticon which he carries with him in his perambulations and uses in illustrating his lectures on theological and other subjects. Due to the aggressiveness of E. C. McCullough & Co., the E-M-F Co.'s agent in Manila, there is probably no one make of cars which has become so strongly entrenched in the Philippine Islands as the E-M-F "30" and the Flanders "20," and it is one of the latter in which the reverend doctor makes his missionary travels. In addition to serving as a mode of conveyance, a new use has been found for the car. A dynamo is attached to the rear deck, and, driven by a belt around one of the rear wheels, furnishes the necessary current for the light in the stereopticon.

While the report from the far-off islands fails to mention it specifically, people conversant with Tagalog customs and preferences would have it that the "picture machine" had a decided influence upon the number of converts this up-to-date missionary has made.

Federal Registration Bill Lifts Its Head.

Despite the long-continued opposition of its chairman, James R. Mann (Ill.), the House Committee on interstate commerce on Monday last, 27th ult., favorably reported the A. A. A. bill providing for the

Federal registration of automobiles and it now is on the House calendar, but as the life of the present Congress ends on Saturday next, 4th inst., the bill has small chance of passage, even were Mann not so hostile. The measure has been introduced into three congresses but never before was it even reported out of committee. The progress gained on this occasion was due largely to the insistence and persistence of Mr. Townsend (Mich.). The bill merely would give to motorists what is supposed to be the inherent and inalienable right of all citizens—the right to enter any and all states comprising the nation without fee or interference, but its constitutionality is questioned on the ground that it is a violation of States rights.

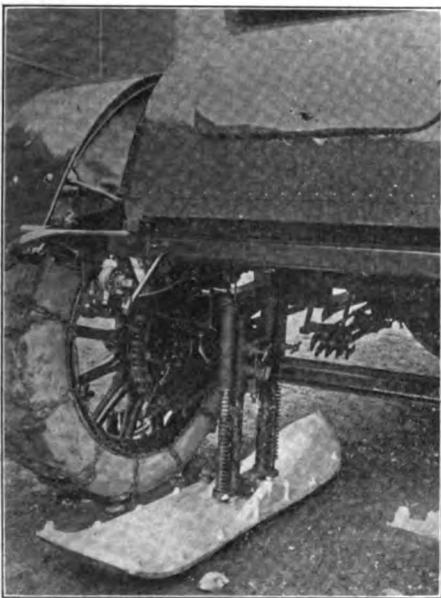
Leather that Requires Lubrication.

If the universal joints on the cardan shaft are covered with leather, this leather should be filled with grease as well as the joints themselves. Unless this is done the collar round the cardan, on which the leather is fixed at one end, will get caked up and bind to the shaft, wind the cover round the shaft and burn it off by the friction set up.

TO ASSIST POLAR EXPLORATION

Frenchman Evolves a Combined Car and Sleigh—Novel Means of Carrying and Adjusting Rear Runners.

Rene Le Grain, a Frenchman, is the individual who most recently has taxed his brain in the endeavor to assist polar exploration by means of a motor vehicle. Although his creation does not lack what may be termed individuality, Le Grain, unlike some other inventors, has not evolved a particularly weird-looking contrivance. He was content to employ an every-day touring car as a foundation, and as a re-



ADJUSTABLE REAR RUNNERS

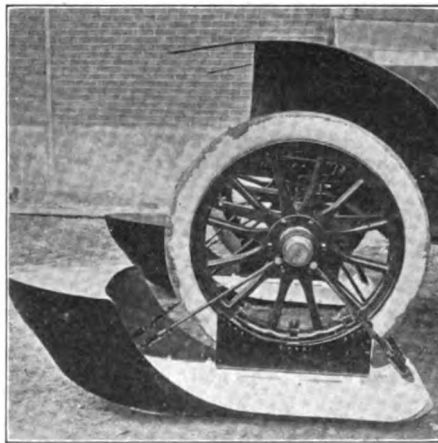
sult he is able to offer the explorer a vehicle that will permit him to roll or slide as conditions present themselves. In a general way the Frenchman merely has applied runners to a car, but the manner in which they are applied, the rear ones particularly, is distinctly original.

As the accompanying illustrations show, the vehicle is a complete touring car, distinguished from others of its size and weight only by the huge twin pneumatics fitted to each rear wheel, to which, of course, anti-skidding chains are applied. When the car is to be used as a motor sleigh the front wheels are jacked up and fitted into cradles, which are carried on broad, boat-shaped runners. They are strapped to these cradles and then let down to rest on the runners in an immovable position, being in addition supported by four stay rods.

The rear runners are fitted permanently to the car, being raised close to the axle when not in use. To bring them into operation a small crank is turned, causing the threaded piston to be lowered until the

greater part of the weight of the car is borne by the broad runners, leaving the rear wheels resting only lightly upon the ice. When the clutch is let in, the wheels fitted with the anti-skid chains afford sufficient traction to slide the car forward on the runners. When not in use the front runners can be carried on the running boards ready for instant use, or they may be stowed away in the roomy compartment in the rear of the car.

The transmission is by jackshaft and double side chains to rear axle. A unique braking arrangement is fitted for use on smooth ice or hard packed snow. Beside the regular emergency brake lever there is a lever which operates two steel spurs which dig into the ice and which not only assist the braking operation, but which by manipulation of the lever may be employed



DEMOUNTABLE FRONT SHOES

to assist in turning and otherwise steering the car.

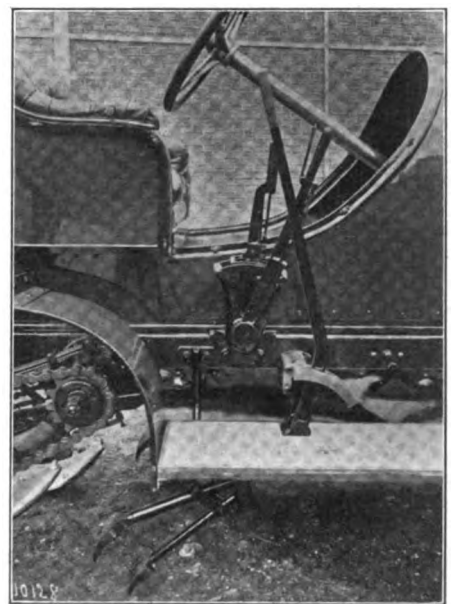
Closed Cars Only Desired by Chinese.

There are perhaps a dozen or more motor cars in Tientsin, China, two or three of which are owned by Chinese, says Consul-General Samuel S. Knabenshue, in a report to Washington dealing with the subject. The others belong to foreign residents. There are also about half a dozen in Peking. The streets of the Tientsin foreign settlement are broad and level, well macadamized and excellent for motoring. The boulevard encircling the native city is also good for the purpose. It occupies the site of the old city wall and moat, which wall was leveled by the provisional government in 1900. Peking has a number of very wide streets, and an automobile can be used to advantage in that city, which is 89 miles from Tientsin by rail. All foreign articles used in Peking come from the establishments in Tientsin.

The average Chinese street, however, is too narrow to allow wheeled vehicles to pass, or, in fact, to be used. But the great obstacle to an enormous trade in motor cars in China is the absence of roads. A

Chinese road is simply a cart track winding across the country. It is always very narrow. The only vehicle used outside the cities is a heavy wooden two-wheeled cart drawn by horses or donkeys. In the rainy season these roads are quagmires. In the hilly regions the roads become water-courses in the rainy season, and the action of the water converts them into cuttings or ditches far below the average level of the country. On one stretch of road near Peking the trackway is 12 to 15 feet below the general level.

Nevertheless, a good business in motor cars suited to their ideas can be done among the wealthy Chinese, according to Consul Knabenshue, every carriage used by Chinese is of a closed pattern, following



CONTROLS OF SLEIGH-CAR

the style of the sedan chairs, and the automobiles also must be of this type, particularly as no wealthy Chinese lady ever appears in public in an open vehicle.

Noise Caused by Dry Timing Gears.

A particularly annoying noise which is more of a rattle than a knock sometimes is caused by the timing gears having run dryer than they should be. It may be that the grease has worked back into the crank case or it may have oozed out around the pulley which drives the fan belt if the fan is driven in this way. The noise scarcely is audible at low engine speeds, but rapidly becomes louder as the engine is accelerated. This is due in part to the fact that gears are made of extremely hard metal and tend to ring. While the grease is meant primarily to lubricate it also has the effect of deadening this sound, which develops principally in those gears in which the teeth are cut straight as differentiating from those of the helical or spiral type, which have the teeth cut obliquely across the periphery of the wheels.

STOCK CAR IS ONCE MORE DEFINED

New Definition Amplier but Differs Little from Old One—But Stock Models Now Must be Registered.

Henceforth any manufacturer who, for the purposes of competition, desires his car or chassis to be recognized as a stock car or stock chassis must file with the contest board of the American Automobile Association not merely the certificate of description required in former years but must accompany the certificate with a check for \$50 for each model, if he be a member of the Manufacturers' Contest Association, or \$100 for each model if he is not a member of that organization. The fee will entitle such manufacturer to a registration number and the car or chassis will not be considered a stock model until the registration number is assigned.

This is one of the more important of the new regulations governing stock cars which were made public late last week by the A. A. A. and is one of several new rules recommended by the Manufacturers' Contest Association. One other of the new requirements affects importers. To obtain registration of a car as a stock model, they must have actually sold in this country a number of cars equal to those required of American manufacturers. The output of the foreign factory no longer will decide the status of the imported car in this country.

Although it has been amplified, the definition of a stock car has not undergone changes in its essentials. The revised rules dealing with it are as follows:

Stock Car—A motor car which complies with each and all of the following requirements:

1. **Certificate of Description**—A complete description of the car upon the official blank provided for the purpose must be filed with the technical committee of the contest board at least 30 days prior to the first contest in which the car shall compete.

2. **Registration Number**—No certificate or description of a stock car or chassis filed with the contest board shall be valid until the maker shall have received notification of its acceptance with the assignment of a registration number by the contest board. The fee for registration of each model shall be \$50 to M. C. A. members, and \$100 to non-members of the M. C. A.

3. **Car on Sale**—The car must be or have been on sale through all the regular selling representatives of the manufacturers during the period of its production.

4. **Manufacturer's Annual Output**—The manufacturer's annual output shall include his total production of all models excluding taxicabs, delivery wagons or other vehicles designed for commercial use.

5. **Quantity Production of Model**—The quantity production of any model must bear to the total annual output of its manufacturer the ratio set forth in the follow-

ing table, based upon a period of time from July 1st to June 30th of the following year:

Total Annual Output All Models.	Percentage of Same Model.
10,000 cars or more	4.5%
8,000 cars to 9,999	5.0%
6,000 cars to 7,999	6.0%
4,000 cars to 5,999	7.0%
2,000 cars to 3,999	8.0%
1,000 cars to 1,999	9.0%
500 cars to 999	10.0%
250 cars to 499	16.0%
100 cars to 249	30.0%
50 cars to 99	50.0%

6. **Percentage of Output**—The required percentage of output of any special model shall in every case be in accordance with the table in paragraph 5. Percentages are calculated on actual total annual output.

7. **Minimum of 25 Cars**—Whatever may be the number of cars of the same model necessary to constitute the percentage called for by the foregoing table in paragraph 5, at least 25 of such cars must have first been built before such model is entitled to a stock rating.

8. **Bodies on Same Chassis**—The use of different bodies—touring car, miniature tonneau, runabout, etc., upon the same chassis shall not constitute a difference of model under the meaning of this definition, but cars thus equipped must be entered in the respective classes to which the body equipment renders them eligible. Miniature tonneaus, surreys, double or single rumbles shall, for the purpose of these rules, be considered runabouts.

9. **Foreign-built Cars**—In determining the stock status of a foreign-built car, the total number of such cars imported into this country shall be taken instead of the total output of the foreign factory, and the number of any particular model necessary to constitute it a stock model shall be determined by the ratio set forth in the foregoing table in paragraph 5; in other words, the intent of this rule is to place the importer of foreign cars on the same basis as the American manufacturer.

10. **Cars Must Correspond to Registration**—The cars entered in any contest must absolutely correspond to the detailed description contained in the Certificate of Description; otherwise they shall not be permitted to start in the contest and entry fee paid shall be forfeited to the promoter.

The definition of stripped stock chassis remains practically as heretofore, and though it remains possible to so alter them that they cannot be recognized by men who own cars of the same model, the "option" permitting change of piston diameters has been made more specific. It is now provided that piston diameters "may be lessened" only and that "the form of rings and number of oil grooves, etc., must be standard."

The classification of cars remains substantially unchanged, save that the minimum weight of "stock chassis" has been reduced 200 pounds in each division of Class B, which deals with stock chassis on a weight and piston displacement basis. Class A remains the class for stock cars on a price basis. In this connection a new and rather severe rule has been adopted prohibiting the running of Class A and Class B events "in any contest unless a member or representative of the technical committee of the contest board is present.

The powers of the technical committee have been considerably enlarged. Among other things it is provided that the decision of that committee concerning the eligibility of cars shall be final and without appeal, and that no car which it has disqualified shall be permitted to compete, under protest or otherwise.

Motor Car that Saved a Newspaper.

Because the Carson City News was enterprising enough to have an automobile in its service, a large part of the state of Nevada did not miss its daily newspaper when a balky electric power house failed to furnish the necessary "juice" to run the newspaper plant. As it had no auxiliary power plant and no prospect of current, the News was unable to operate its linotype machines or printing presses, and the paper could not be gotten out. A master mechanic of the ingenious variety suggested that if the company's Maxwell car could be gotten into the press room he could hitch it up and start the machinery. Accordingly, several partitions were removed and the automobile was placed in the desired spot. The rear of the car was jacked up, and, by the use of impromptu shafting and belting, the machines were set in motion. Hereafter, it is added, the News will not miss an issue even if the electric power fails, for when the lights grow dim and the power weak the headlights of the car will be lighted, the motor started and the News will appear on record time, ground out by an automobile.

Skull and Crossbones for Scorchers.

"An eye for an eye, a tooth for a tooth and a life for a life," accompanied by a picture of a skull and crossbones, is the inscription printed on a huge signboard which has been placed on the mountain road between San Jose and Santa Cruz, Cal., to warn motorists that the mountaineers and farmers will no longer permit speeding on the highways. The sign is posted between the towns of Los Gatos and Alma and is the last warning to the speeders as they enter the foothills, and is indicative of the fact that the mountaineers are about to take the law into their own hands. The president of the Santa Clara County Automobile Club said, in discussing the difficulty between the motorists and the residents along the Santa Cruz road, that the club would willingly pay out of its funds the salary of a man to patrol the road and see that speeding is stopped.

Cleveland Club Elects New Officers.

At the annual meeting of the Cleveland Automobile Club which was held last week, Fred C. Wood was elected president and Harry L. Vail, vice-president. The offices of secretary and treasurer were filled by T. Cawgin and H. G. Johnson, respectively. Fred C. Wood, R. C. Wetmore and H. L. Vail constitute the show committee.

WHEN ENGLAND AND GERMANY MEET

**Contest for Prince Henry Trophy Promises
Real Sportsmanship and not Trade Rivalry—Rules Finally Adopted.**

All arrangements for holding the Prince Henry 1911 tour under the new and more interesting conditions have been completed. It will start from Homburg, Germany, on July 4th, and end in London, England, on July 19th, and there will be answered the question, Who wins? Germany or England? For as already is well known the Prince Henry tour of 1911 will be an international team contest, in which the performances of the individual car and individual owner-driver are submerged in the total showing of the two rival clubs of England and Germany; the manufacturers and professional drivers will be eliminated entirely. It is an owners' contest pure and simple, and the size of the teams, 50 cars each, and the international rivalry that will be generated will give to it a world-interest it has never fully enjoyed. The total road distance will approximate 3,000 kilometers, one-third of which will be made on German soil and two-thirds on the highways of Great Britain, with an ocean trip of 30 hours sandwiched between.

The most important paragraphs of the rules and regulations, which just have been made public, require that the 50 members of the Royal Automobile Club of Great Britain and the same number of members of the Kaiserlicher Automobil Club of Germany shall be appointed by these respective clubs, each member so nominated to be the rightful owner of the car he has entered, although it is quite immaterial in what country the car was produced. The makes of cars entered will not be made public in the official announcements of the two automobile clubs concerned, in order to obviate all attempts to utilize the performances of these cars in advertisements. The cars will not be counted as individual entries, but the full 50 entrants nominated by one club constitute an entity. All penalizations entered against the 50 cars of one club are added together and the club having the smaller number of penalizations will receive the trophy.

The cars taking part must not have a larger bore (in 4-cylinder motors) than 100 mm, or smaller than 80 mm; in six-cylinder machines the bore should be not smaller than 65 mm, nor larger than 115 mm. The stroke shall not exceed 165 mm. Steam propelled cars are not excluded. All cars must be four seated and be fully equipped for touring, with side lights, head lights, windshields, top, signal horn (which latter must be single-toned; no sirens or exhaust horns permitted), speedometers, two independent brakes and tire chains;

the cut-out must remain sealed throughout the tour.

It is not absolutely necessary that the entrant of a car drive it himself, but whoever does drive it must be a thoroughly accredited member of either the R. A. C. or the K. A. C. Each car must carry at least three persons, which shall consist of the driver, a mechanic and the observer. The fourth seat in each car may be utilized in any way the entrant sees fit; he may take any passenger he pleases, may change passengers whenever he cares to; he is, however, not compelled to have the seat occupied. Ladies may take part in the run as passengers, but not as entrants or drivers. Drivers must have the international automobile driver's license.

Entrance fee to the run amounts to \$200 for each car, which includes transportation across the North Sea and Channel for the car and the driver and mechanic. The observer and possible passengers must pay their own transportation at the rate of \$25 each.

Each club nominates fifty impartial observers, who will be divided so as to furnish an English observer for every German car, and a German observer for every English car. Penalizations range from one point for every minute (or fraction thereof) of stopping for repairs, radiator filling, etc., to 50 points for every day short of the schedule time if a car drops out of the run entirely. All repairs must be made with material taken along from the start; 12 points extra are added to the regular penalizations if materials are bought during the trip.

The schedule of the run provides for:

Tuesday, July 4th—Examination of the cars in Homburg.

Wednesday, July 5th—From Homburg to Cologne.

Thursday, July 6th—Cologne to Muenster.

Friday, July 7th—Muenster to Bremerhaven; embarkation.

Saturday, July 8th—Sea voyage to Southampton.

Sunday, July 9th—Debarkation and inspection; preparations for start.

Monday, July 10th—Southampton to Leamington.

Tuesday, July 11th—Leamington to Harrogate.

Wednesday, July 12th—Harrogate to Newcastle-on-Tyne.

Thursday, July 13th—Newcastle to Edinburgh.

Friday, July 14th—Rest at Edinburgh.

Saturday, July 15th—Edinburgh to Windermere.

Sunday, July 16th—Rest at Windermere.

Monday, July 17th—Windermere to Shrewsbury.

Tuesday, July 18th—Shrewsbury to Cheltenham.

Wednesday, July 19th—Cheltenham to London.

The daily schedule varies from 200 to 260 kilometers in Germany to 250 to 275 kilometers in England. The speed limit is 20 miles per hour in England, 35 kilometers per hour in Germany; a passing of cars is not permitted, excepting the passed car could not maintain this average speed. In such case the observer must give permission to pass the slower going car. Passing a car within the limits of a town or village is strictly prohibited.

To Complete Scenic Road in Rockies.

Appropriations have just been made by the New Mexico good roads commission and Bernabillo county, in which Albuquerque, New Mexico, is located, of sufficient funds to complete the New Mexico scenic highway from Santa Fe to Albuquerque, a distance of 60 miles. This road is now complete from Raton to Santa Fe, and eventually will cross New Mexico from the Colorado line at Raton to El Paso, Tex. The road from Santa Fe to Albuquerque will have been completed within six months, giving a broad automobile pike, on easy grades and through the finest scenery in the Rockies. The road connects with the Colorado state road at the state line, thus giving an automobile road from Denver to Albuquerque. Construction of the road from Albuquerque south will begin in the fall.

Cobe Remains President of Chicago Club.

With one exception, the officers of the Chicago Automobile Club were re-elected at the annual meeting which was held last week. The change is in the office of secretary, this position now being held by Fred. J. Ringley, vice Chas. A. MacDonald, who retired. The officers who will continue to serve are as follows: President, Ira M. Cobe; vice-presidents, T. N. Koehler and T. J. Hyman; treasurer, George S. White; directors, F. W. Blocki, Claude Seymour, Allan S. Ray, B. B. Johnson, Harry Visering and R. C. Evans.

Cincinnati Automobilists Form New Club.

Motorists of Cincinnati, O., have organized the Campbell County Automobile Club and elected the following officers: President, Frederick Miller; vice-president, Otto Listena; secretary, Dr. William A. Young; treasurer, George E. Ferris. The board of governors is composed of George E. Saurton, Dr. W. O. Gillam, M. M. Andrews, G. M. Lockwood and Alex. Smith.

Colorado Association Chooses Officers.

At the annual meeting of the Colorado State Automobile Association, Ralph W. Smith and Elmer E. Somers were elected president and secretary-manager, respectively. John W. Springer is the new treasurer. Resolutions were passed directing the officers to co-operate with affiliated bodies in an endeavor to bring the 1912 national good roads convention to Denver.

REDUCING THE COST OF UPKEEP

How One Owner Kept Down His Monthly Bills—Unexpected Visits to Garage Contributed to His Awakening.

"I used to be a pretty good customer for the man who owns the garage where I keep my car," vouchsafed the Owner, "and I guess he wonders why my bills are considerably smaller than they once were. Why, a hundred a month was nothing. Usually it was more than that and I commenced to get worried, for I'm no millionaire, and while I don't mind paying for what I get I had a suspicion I was being played for a sucker, to use a vulgar though expressive phrase.

"So one day, just after I had paid my bill, which very closely approximated to a century note, I decided to get to the bottom of things. I was mad clean through when I noticed the smirking and self-satisfied look on the face of the garage owner and, believe me, if it hadn't been for my resolution to make a little investigation I would have shifted my car to another garage right then. But I am glad now that I did not, for I might have done worse, and as it is I have learned a whole lot about the management of that particular garage, and what is more to the point my knowledge of my own car has been increased to the point where I don't have to rely on the other fellow's.

"I took to dropping in unexpectedly and sometimes the consequences were unexpected in more ways than one. Once I found an interested coterie gathered around my car; the hood had been raised and an apprentice boy was demonstrating to an enthusiastic audience the fact that he could adjust a carburetter—and my carburetter at that! And I was paying for the gasoline, and the oil, and the wear and tear on the engine the while it was running about a million revolutions a minute and sounded as if it would fly to bits any minute. That cleared up a little of the mystery and I began to see light. It made plain where my cylinders gathered some of their carbon and how my bearings got loose. Needless to say, I had been paying to have the engine taken down and the carbon removed and the bearings tightened about every two months.

"I went to the garage another evening to put a lock on my ignition switch and surprised the washer in the act of driving my car into its allotted niche between two other cars. More gasoline and tires and cylinder oil gone. And where would I have been if the would-be chauffeur had, to use a common excuse, stepped on the accelerator instead of the brake? 'Someone backed into your car last night,' is what I would have heard next time I showed up to take

the car out. And as the owner of the garage was not present and did not know who did it, and could not blame anyone in particular, or any one of a hundred or more equally as good excuses, I would have to pay as usual, unless the damage was sufficient to warrant a claim against the insurance company. Maybe the garage owner would have made the necessary repairs gratis; but there is small satisfaction in that. No car looks as well with straightened fenders as it does with unmarred ones and, besides, I wouldn't have had the use of the car all the time it was in the shop.

"I got my lock put on and put a stop to such practices and my bills came down a couple of pegs in consequence. Then there was another very delectable little trick which used to be common. You know I used to carry my Prest-O-Lite tank on the running board. It's gone now, eh? Somebody steal it? Oh, no—I simply hid it away in a locker, and I'll tell you why. Figuring that if acetylene headlights are good on the road they must be equally good in the garage, the washer used to light my lamps while at work. Whether it was to save money for his employer or to be able to do a better job of washing (which is unlikely), I don't know. The ultimate result was the same in either case. I did not get the benefit of any more cleanliness, but I did have to buy a fresh tank of gas about twice a month. The garage owner, by the way, was agent for that particular make of tanks.

"And my tire expense used to be fierce. Of course, some of it was my fault—I don't dispute that. But I am firmly convinced that it was not all my fault, for on two separate occasions I found my car in the morning with a flat tire and a big arrow chalked on the casing to designate the place where a three-inch nail was driven in up to the head. Now, you can say what you like, but in my three years' motoring experience I have never yet picked up a nail on the road and had it driven in the way those nails were. Every nail I've ever picked up has gone in side ways, except one, and that was in a piece of board I ran over and it went in head foremost, which was easily accounted for.

"The first of the two aforementioned punctures was simple, and the garage owner only charged me 75 cents for repairing the tube. In the second instance the nail was in a rather tender spot in the shoe, and I myself took it to a repair house. They examined it and ran steel bodkins through it and ended by slicing a lot of the tread off. In the end I had to pay for an eight-inch section. But it cost me less than a five-inch section which had been done through the garage. That taught me a lesson. I got one of those little electric vulcanizers, you know the kind I mean, and my tire expense is practically nil. I haven't been able to figure how little it costs to repair a common puncture, and I don't have blow-

outs, because I vulcanize cuts in the shoes the day I got them. Twice when I dropped into the garage unexpectedly I found workmen dozing in my car, one of them occupying the rear seat with his feet cocked up on the back of the front one, which accounted for some scratches on the paint, for which I had been unable to account and which were impossible to obliterate.

"Mind you, I don't mean to say that all garage owners are the same. They are not, and I know this, because I have found one who would end the search of Diogenes if he ever came to this section of the country. But there are some unscrupulous garage owners who would hesitate at nothing as long as it brought gold to their coffers, and it is just such things as I have related, whether they are thoughtless or otherwise, which have made many a new owner sore.

"I used to have all my adjustments, when they became necessary, made at the garage. Now I do them myself and save the 75 cents an hour which was charged up to me under the head of mechanical labor. I haven't had a technical education and I never have worked in a machine shop, but I'm willing to bet I can tighten nuts and bolts with the best of 'em. And that's about all my adjustments ever amounted to—as I found out afterwards. Examining my car occasionally and generally 'hunting trouble' I learned more about that car than I imagined there was to be known. Now I have the satisfaction of being able to help myself in case of trouble on the road, and many a time my knowledge has come in handy, too, and enabled me to get home, where I would have been towed home before.

"Those are some of the ways in which I cut down expense, and when I got my monthly bills down to about a third of what they used to be I thought I was doing pretty well. Pretty soon I'm going to cut them down still further. I'll use my car just as much as I do now, perhaps more, and my total expense won't be half what it is now. I'll have my own garage and save storage expense. Then I'll put in an underground gasoline storage tank and buy my gas for nearly half what I have to pay for it now. My oil will come to me in a barrel at less than half garage prices, and I will know what I am getting. When the car needs to be washed I will take it around the corner and have it done at the nearest garage and the paint will wear longer for less washing. In the summer when the roads are dry a feather duster wielded by 'yours truly' will suffice.

"The best of the whole arrangement will be that the car will be right there when I want it, and I won't have to waste time chasing around to a garage and then back for the family. No, I haven't got a chauffeur and I don't want one. I use my car purely for pleasure, and the greatest part of the pleasure is in knowing how to drive and in doing it myself."

CORRESPONDENCE

The Relation of Stroke to Bore.

Editor of the Motor World:

My experience is limited, and as I expect to buy a machine within the next month or two I am trying to get a little unbiased information. I am looking at two machines, both of $4\frac{1}{2}$ inch bore, and the A. L. A. M. rating of 32.4 is the same for both. However, one has $4\frac{1}{4}$ inch stroke while the other has a 5 inch stroke. I would like to know just what difference that $\frac{3}{4}$ inch of stroke would make, other things being equal.

A. E. REESOR,
Redlands, Cal.

["Other things being equal," $\frac{3}{4}$ inch difference in stroke ought to make about $5\frac{1}{2}$ horsepower difference in favor of the longer stroke engine. This is based on the natural assumption that under working conditions both engines would make the same number of revolutions per minute. That is to say, assuming the effective pressure throughout the working stroke to average 80 pounds per square inch in each case, the horsepower developed at 1,200 revolutions per minute theoretically would be 32.7 for the engine having $4\frac{1}{4}$ inch stroke, and 38.5 for the engine having 5 inch stroke.

The assumption upon which the A. L. A. M. formula is based is that the rate of piston speed is constant at about 1,000 feet per minute with all engines of standard construction. Supposing this to be the case, and using the same mean effective pressure as before, that is to say, 80 pounds per square inch, both engines might be expected theoretically to develop 38.5 horsepower, the short-stroke one making a little over 1,400 revolutions per minute and the long-stroke 1,200. As a matter of fact, however, it is likely that the long-stroke engine is actually built for a higher piston speed than the other, as most designers of such motors work toward high piston speeds, so that under average conditions the $4\frac{1}{2}$ by 5 inch engine probably would show the greater power, though possibly not as great as the theoretical calculation shows.

The longer crank arm of the long-stroke engine also means that that motor will have a higher "torque" at low speeds, and so will be capable of pulling the car more evenly on high gear when throttled down. This means a quiet-running motor for high-gear use and one that should prove economical of gas.

With the short-stroke motor, on the other hand, the lighter moving parts make it easier to obtain a good balance of moving parts and generally imply freedom from troublesome vibration at ordinary speeds. As engines of this type usually are

built to run at pretty nearly constant speed they usually prove durable and require very little attention if properly used.]

Why the "Bull-Dog" from Detroit.

Editor of the Motor World:

Relative to the claim brought about by a certain automobile company of Muncie, Ind., to the title of "Bull-Dog" as applied to a motor car, we wish to say in justification of our claim that at the time of the beginning of the Abbott-Detroit "Bull-Dog" journey of 100,000 miles, Dr. Charles Percival had in his possession a very valuable bull-dog, and when the first picture of the group starting on this wonderful journey was taken, the dog was very prominently placed in the picture, more in the nature of a mascot than with any intention of naming the car after this particular species of canine. The press upon publishing the first picture of the now famous car, dubbed it the "Abbott-Detroit Bull-Dog," and it may be safely assumed that had the press of this city any knowledge of any other car traveling under that title they would not have given it to the Abbott-Detroit, except it might be their opinion that the Abbott-Detroit was more rightfully entitled to such a nom-de-plume.

A certain automobile company at Muncie, Ind., lays claim to the title "Bull-Dog" as applied to a motor car. In applying the term "Bull-Dog" to any animate object, you usually associate that term with the characteristics of the animal, namely—tenacity of purpose, ability to get there and staying qualities.

The fact that the Abbott-Detroit Bull-Dog has covered more miles than any car could have covered in taking so short a trip as the one from Muncie, Ind., took to the Pacific Coast, would ethically entitle it to the name "Bull-Dog."

We lay claim for our car to all the qualities of the "Bull-Dog," except the growl. We grant that to the firm in Muncie, Ind.

ABBOTT MOTOR CO.,
Detroit, Mich.

What Curtails American Export Trade.

Editor of the Motor World:

In a recent number of your magazine we observe that the American consul here in his report said that American automobiles are very few here, owing to the lack of expert mechanics to handle them. The consul, however, has been misinformed. The principal reason why the American cars are not largely introduced is the system adopted by manufacturers who seek to deal here on the same terms as they do in the states. On the other hand, the European makers give to their agents financial conditions to handle their cars. As a result but two American cars, the Pope-Hartford and the Mitchell, are handled here, while 14 French cars, 9 German, 5 English, 4 Italian, 3 Belgian and 3 Swiss cars are

represented by regularly appointed dealers.

G. BANHO & CO.,
Rio de Janeiro, Brazil.

Accidents in Cities and in Country.

Editor of the Motor World:

There was an increase of nearly 40 per cent. in fatal automobile accidents in Massachusetts in the year 1910, according to the annual report of the State Highway Commissioners, which was summarized in the Motor World of Feb. 16. There were 1,182 accidents in which automobiles were concerned, an increase of 52, but there were 77 killed, compared with 52 in 1909. Of those killed 25 were in automobiles, 44 were pedestrians, 4 were bicyclists, 3 were occupants of carriages, and 1 a street car passenger. Of the total accidents 867 occurred in the day time. The accidents in the country diminished from 314 in 1909 to 222 last year, but in the cities and towns they increased from 816 to 960.

These statistics recall that in 1910 Massachusetts passed a new automobile law which dealt specifically with automobile horns and signals. In purpose this law strove to restrict automobile noises in the cities and towns of the state by making it a misdemeanor, punishable by fine or imprisonment, for a motorist to make an unnecessary noise with his signal.

It appears that the law was at first generally misunderstood. Many motorists interpreted it as prescribing definitely against the powerful discordant signal now commonly used. Many who carried such signals stopped using them in city streets; others went so far as to remove them from their cars.

This misunderstanding brought about an interpretation of the law, which now seems generally clear. The law does not prescribe against any particular type of signal but simply against the unnecessary use of all automobile horns and signals.

The State Highway Commissioners are now confronted, however, with a solution of the alarming increase in 1910 of accidents in the cities and towns of the state. This increase is nearly 18 per cent., whereas accidents in the country districts show a decrease of nearly 30 per cent.

Since the new law deals principally with the use of signals in cities and towns, it would seem as though the new law itself were responsible. Two questions then arise: was the misunderstanding of the law to blame? or is the law itself at fault, as it is now correctly interpreted?

To put it more definitely—and all other cities are now confronted with the same problem—is it wise to restrict too much the use of the automobile warning?

Motorists take the stand that their best interests in the matter are affected by a few drivers in every community, who either from inexperience or wilfulness sound their signals unnecessarily often and unneces-

sarily loud. But they point that these motorists should be dealt with individually and punished as disorderly persons; that, in order to correct these few nuisance makers, it is unwise and dangerous so to restrict all drivers that they cannot adequately warn others of their approach.

With the advent of the powerful, discordant signal, a few cities passed hasty ordinances against the use of such a signal. Today, however, these ordinances have either been repealed or are else practically ineffective because of their liberal interpretations by police authorities. This type of signal, while admittedly not agreeable, is now generally regarded as a necessary factor of public safety.

The New York state law provides simply for "a suitable and adequate bell, horn or other device for signaling"; it makes mandatory the sounding of a signal at intersecting ways, corners and curves; in other words, wherever necessary; and furthermore, the state law expressly forbids the passage of any ordinance interfering with the stipulation by any city, town or village within the state.

Inasmuch as New York state has dealt more deeply with the problem of the automobile than any other state, and since it also has the largest urban population, its automobile laws have served as models for other states. Nearly every other state has a similar law.

It is worthy of note that New York City, where traffic is most congested and automobiling most dangerous, has made no protest against the powerful signal, nor attempted to restrict its use, except so far as disorderliness is concerned. The traffic police are in one accord as to the necessity of frequent and powerful signaling.

In New York City most of the disturbing and unnecessary signal noise is made by irresponsible chauffeurs. The suggestion has been made and may be acted upon, that a clause be inserted in chauffeurs' licenses providing that the license be revoked if the holder is found guilty of unnecessary signaling. This idea is generally regarded as a practical one; and by its adoption many cities might find a solution of the problem far more satisfactory than any general restrictive ordinance.

C. J.

Devices to Keep the Car Warm.

Editor of the Motor World:

The New Yorker who substituted a grating for the footboard of his car and thus obtained a hot-air register was not the first motorist to do that sort of thing. I fitted a similar register in my car more than a year ago, and it since has worked like a charm.

I am now having a register put in the rear seat bottom of my touring car. It is placed over the muffler, and I have engaged the city tinsmith to fit a hot air flue to the register. The flue will be one inch from

the muffler on the front, while on the rear and on both sides it will nearly touch the hot muffler. This will give me a great deal of heat.

J. E. ENGSTAD,
Grand Forks, N. D.

"Education" that Promotes Sales!

[Extract from the Automobile, which styles itself an "educational automobile magazine" with a penchant for "writers of great engineering skill."]

"What I need is an automobile!"

"Granted!"

"I need one the worst way!"

"On credit!"

"Granted!"

"Why do you not get one?"

"How?"

"Pay for it."

"With what?"

"Money!"

"Where will I get the money?"

"From me!"

"Did I marry an heiress, my dear?"

"Not exactly, but I have \$1,000!"

"What?"

"O-n-e t-h-o-u-s-a-n-d d-o-l-l-a-r-s."

"What a lot of money! Where did you get it?"

"Had it in the bank all of the time!"

"Grew there to your account?"

"No! Uncle Jack (lives in China, you know) placed it to my credit when I graduated. He was on a visit to our house. I made biscuits and honey for tea. Dear old Uncle Jack said: 'It was worth a thousand!'"

"The honey!"

"Would you really like an automobile, hubby, dear?"

"You know that I would be frantic with joy!"

"Biscuits?"

"Biscuits!"

"Don't be long, hubby, dear, and be sure and get some styles with the automobile; try and save out a little of the money for the rainy day!"

"Bye! Bye! sweetheart! It will be as simple as rolling off a log!"

"Logs lay in swamps!"

"Bye! bye!" (Half-way up the block hubby turns and waves his hand). "And she had that thousand dollars all the time!"

When Dooley Acted as a Tow Post.

In consequence of acting as a tow post, which, by the way, is his last appearance in that capacity, Edward T. Dooley, a photographer of Berkeley, Cal., is under a physician's care and has been ordered to take a month off for recuperation. Dooley, it appears, was returning home one day last week when his car gave out. He then was but a few miles from Berkeley, and when another motorist came along and offered him a tow, he accepted with alacrity. However, he objected to the tying of the tow line to the axle of his machine, fearing that

the pull might bend the axle out of true. Instead he hit on the plan of tying the rope around his own waist as he sat at the wheel.

The plan worked excellently so long as the "live" machine went at a moderate pace. But as it gained momentum, Dooley began to suffer. Every bump demonstrated to him that a tow post is a noble toiler. At length his machine hit a rut and stopped. But Dooley went on. He cleared his radiator with a clean parabolic motion and landed among the road metal. He was dragged along the road unmercifully until the driver of the leading machine learned of his plight. He was picked up badly bruised, with face and hands scratched considerably, but otherwise sound of limb.

Doctor Gets \$3,800 for Spoiled Smile.

Because he could smile only on one side of his face after an accident due to an automobile collision, Dr. George W. Dobbins, of Baltimore, Md., sued E. Holmes Bay, owner of the machine with which he collided, for \$25,000, but obtained a verdict for only about one-seventh that sum. In his testimony Dr. Dobbins said that he could not laugh properly. When he was amused one side of his face would smile while the other side—the collapsed side—would not. It made him very funny. There were even more substantial troubles. He could not eat soup, for if he put it in one side of his mouth it had a tendency to run out of the other. Another of the deprivations and embarrassments was that he could not hold a cigar in his mouth. The doctor said his practice netted him \$12,000, and that he had been deprived of \$5,000 during his illness of five months. The jury last week awarded him \$3,800.

Extensive "Stable" of an Emperor.

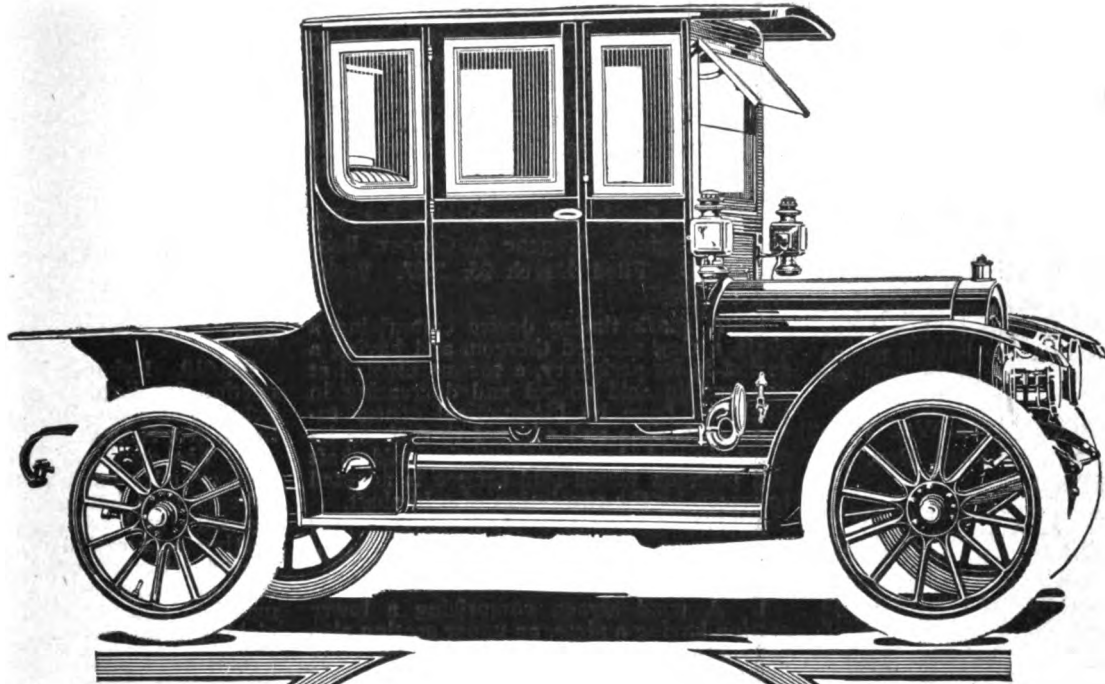
Four new automobiles have been ordered by Emperor William, whose fondness for motoring is again emphasized. With these additions, which are being built by a German firm, His Majesty will have thirty cars, including half a dozen motor baggage trucks. He keeps five machines permanently at Corfu. Each of his fifty palaces has its garage with fireproof gasoline storage tanks. The Emperor's car is easily distinguished by the peculiar fanfare of his motor horn, which may not be used by any one else, and by the Imperial Standard which flies at the right of the chauffeur. At night the flag is replaced by an illuminated glass shield, showing the Standard in the regulation colors, yellow with black arms.

Thirty-one Trucks for Telephone Service.

Thirty-one motor trucks have been bought by a New York telephone company of New York City, at a cost of over \$100,000. The company will employ them in its repair, construction and maintenance departments.

Rambler

Closed Cars



Rambler
Sixty-three
Coupe

FOR the convenience and comfort of the doctor, business man or woman who has necessary outdoor errands in bad weather, and who desires to dispense with the services of a chauffeur, the Rambler Inside-Drive Coupe is especially suited. Its distinctive appearance, warmth and comfort, fine interior finish, and the advantage of driving slowly on high gear in crowded traffic adapt it for theater use, afternoon calls and shopping. Its range of usefulness is greater than that of the ordinary inside-drive car, as the seat is so wide it will comfortably accommodate three, and a drop-seat facing the other will accommodate a fourth passenger.

A telephone message to the nearest Rambler representative will bring this closed car to your door for inspection. A postal will bring you the closed car book.

The Thomas B. Jeffery Company
Main Office and Factory, Kenosha, Wisconsin
Branches: Boston, Chicago, Milwaukee,
Cleveland, San Francisco, New York.

RECENT PATENTS.

976,100. Terminal Fastening. Albert Schmidt, Flint, Mich., assignor to Champion Ignition Company, Flint, Mich., a Corporation of Michigan. Filed Feb. 7, 1910. Serial No. 542,383.

1. The combination of a terminal stem having a groove, an eye to receive the stem adapted to be attached to an electrical conductor, and a spring secured to the eye and normally projecting into the opening thereof to engage the groove in said stem.

976,274. Cap for Renewing the Worn Ends of Engine Valve Stems. James A. McHardy, Providence, R. I., assignor of one-half to Edward M. Johnson, Providence, R. I. Filed Aug. 20, 1909. Serial No. 513,796.

1. As a new article of manufacture, a hardened metallic cap having a substantially plain bore the sides of which are substantially parallel and adapted to be readily applied to an engine valve stem or valve lifter whereby the worn contacting surfaces between the stem and the lifter may be readily renewed, said cap having means whereby the same is retained in position solely by friction.

976,322. Carburetter. Julius Wm. Walters, Glens Falls, N. Y. Filed Nov. 21, 1905. Serial No. 288,401.

1. A constant level carburetter comprising a shell or casing, a float cup arranged therein and provided with a centrally depressed cover, said float cup being spaced apart at its sides, bottom and top from said casing to form an air passage entirely around said cup, an ejector in said depression opening into said cup for the escape or hydrocarbon, an air inlet at the bottom of the casing, and means at the top of said casing for deflecting air into the said depression.

976,344. Carburetter. Silas Christoffer-son, Nelson T. Woods and William E. Jones, Portland, Ore., assignors to Christoffer-son-Woods Carbureter Co., Portland,

Ore., a Corporation of Oregon. Filed Dec. 30, 1909. Serial No. 535,617.

1. A carburetter comprising a casing having a central passage and inclosing a float chamber, a float within said float chamber, said casing having an extension and a float lever pivoted in said extension, a valve in said extension co-operatively connected with said float lever, means for admitting gasoline through said valve into the float chamber, a cap for said casing having a central pipe member projecting into said central passage, a tubular air valve carried on said pipe member, a gasoline valve mounted within the central passage of said casing, pipes connecting the casing of said gasoline valve with said float chamber, said air valve having a passage to permit projection of said gasoline valve casing co-operating with said air valve to vary the area of said air valve passage as said air valve moves.

976,345. Spark Timing Device for Explosive Engines. Eugene A. Cooper, Britton, S. D. Filed March 25, 1907. Serial No. 364,457.

1. A spark timing device comprising a shaft, a ring secured thereon, and having a socket in its periphery, a tongue pivoted at one end in said socket and decreasing in thickness from its longitudinal center toward each edge and adapted to rock on its pivot pin and electrodes inclosing said shaft and between which said tongue is adapted to sweep by the revolution of said shaft.

967,378. Automobile Wind Screen. Earl W. Kingsley, Los Angeles, Cal. Filed Sept. 2, 1909. Serial No. 515,915.

1. A wind screen comprising a lower section having a plate, an upper section also having a plate, said second named plate being normally disposed directly over said first plate and in the same plane therewith, the lower edge of said second plate substantially abutting the upper edge of said first plate, and pivot connection between said sections disposed to one side of the plane of said plates and being above the plate of the lower section, and means for clamping said upper section in an inclined position with respect to said lower section.

976,415. Mixer for Gaseous Fluids. Hartwell W. Webb, Cresskill, and Edward H. Stickels, Edgewater, N. J., assignors to Gyrex Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Aug. 20, 1910. Serial No. 578,200.

1. In a mixer for gaseous fluids, the combination with a supporting element, of a fan or paddle wheel mounted to rotate freely with respect thereto, the said fan or paddle wheel having a plurality of obliquely disposed blades having different pitches.

976,468. Headlight. Frederick Kohout and Robert C. Langley, Dallas, Tex.; said Kohout assignor to George Langley, Dallas, Tex. Filed Feb. 28, 1910. Serial No. 546,437.

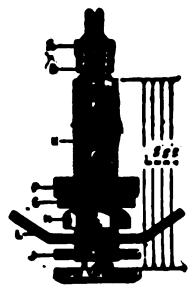
1. In a device of the character described, the combination with bases arranged on a vehicle frame, of lamp brackets arranged to revolve on the bases, lamps carried by the brackets, a shaft supported by the bases, rocker arms arranged on the shaft, resilient links connecting the rocker arms with the lamp brackets, and means for rocking the shaft.

976,610. Exhaust Manifold or Pipe Connection for Explosion Engines. Albert B. Schultz, Buffalo, N. Y. Filed Jan. 5, 1910. Serial No. 536,496.

1. The combination of an explosion engine cylinder having an exhaust outlet, an exhaust pipe having a nipple communicating with said outlet, and means for connecting said cylinder and pipe comprising a stud arranged within said nipple, and a tension interposed between said stud and manifold and operating to press the latter yieldingly against the cylinder.

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Made by the Makers of the famous Kelly-Springfield solid tire

This is the Verdict on No-Rim-Cut Tires

After selling half a million Goodyear No-Rim-Cut tires, these are the facts as we find them :

Last year our tire sales trebled—jumped to \$8,500,000. Yet No-Rim-Cut tires, during most of the year, cost one-fifth more than standard Clincher tires.

This year, sixty-four leading motor car makers have contracted for Goodyear No-Rim-Cut tires.

At the big Automobile Shows held this year,

up to this writing, more pneumatic-tired cars were equipped with Goodyears than with any other make.

Among Goodyear customers, No-Rim-Cut tires outsell our Clincher tires *almost six to one*, now that the price is equal.

All of which shows that men who know are demanding No-Rim-Cut tires. The day of the Clincher is ending.

How They Cut Tire Bills in Two

Rim-Cutting Impossible

It is utterly impossible to rim-cut a Goodyear No-Rim-Cut tire. We have sold half a million to users. We have run the tires deflated in a hundred tests—as far as twenty miles. In all this experience there has never been a single instance of rim-cutting. And there never can be one.

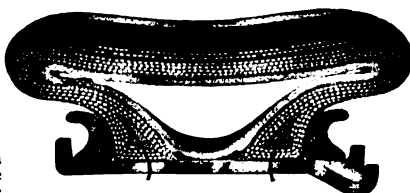
All this worry and expense is ended forever when you adopt Goodyear No-Rim-Cut tires. Let us explain.



Here is the clincher tire as we and others make it. The picture shows how these tires are fitted in any standard rim for quick-detachable tires. Also in demountable rims.

In using these tires the removable rim flanges must be turned to hook inward—as shown in the picture—to grasp hold of the hook in the tire. These tires are called "clinchers" because they hook into the flange. That is how the tires are held on.

When the tire is deflated, note how that thin rim flange digs into the tire casing—forced by the whole weight on the wheel. That is what causes rim-cutting, even when the tire is but partly deflated. In case of a puncture, the tire may be wrecked beyond repair by running a single block.



The 126 Braided Wires

Here is a Goodyear No-Rim-Cut tire fitted in the same standard universal rim. This tire has no hooks on the base. It does not need to be hooked into the rim flange. So the removable rim flanges are turned to hook outward. The rounded edge comes next to the tire, and rim-cutting is utterly out of the question.

The hooks were used because no man knew how to make an unstretchable tire base practical and safe. To prevent the tire from stretching over the rim we had to hook it into the flanges.

We get rid of this need by vulcanizing into the tire base 126 braided piano wires—63 on each side. This makes the tire base unstretchable. Nothing can force the tire off the rim. But, when you unlock and remove the rim flange, the tire comes off in an instant. There is no prying out as with clincher tires, where the hooks "freeze" into the flanges.

When the tire is inflated these braided wires contract. The tire is then held to the rim by a pressure of 134 pounds to the inch. It is so secure that no tire bolts are needed—none are used.

We Control It

These many braided wires, which contract under air pressure, form the only practical way to make an unstretchable tire base. And we control this feature by patent. Many other methods have been tried and discarded. This one alone has made the hookless tire practicable.

We recommend the clincher tire—as do others—where the braided wire base can't be used. But these braided wires perfectly solve the problem. They make the hooked tire unnecessary. They make rim-cutting avoidable. They are bringing a tremendous tide of demand to Goodyear No-Rim-Cut tires.

Tires 10% Oversize

Here is another great saving which this construction makes possible.

The No-Rim-Cut tire begins to flare outward right from the base of the

rim. Note the picture. It is not contracted by the hook-shaped flange.

This enables us to give you a tire 10 per cent oversize, and yet perfectly fit the rim. And we give you this extra without extra cost.

That means one-tenth more air—10 per cent greater carrying capacity. It means, on the average, 25 per cent additional mileage.

The Reason Is This

Motor car makers adapt their tire sizes to the expected load. That means the weight of the car as they sell it and the weight of the passengers at 150 pounds each. In these days of close prices few motor car makers can afford to allow much margin.

But most owners add extras—a top, glass front, gas tank, gas lamps, extra tires, etc. And passengers sometimes weigh more than 150 pounds. As a result, the tires are overloaded beyond the elastic limit. The result is a blow-out, often while the tire is new. And the motor car owner, not knowing the facts, usually blames the tire.

To take care of these extras, and avoid this blame, we give you the 10 per cent extra size which the No-Rim-Cut style allows. And we give it with out extra charge.

This oversize on the average, adds 25 per cent to the tire mileage. The No-Rim-Cut feature saves another 25 per cent. It is safe to say that these two features together cut tire bills in two on the average.

They cost nothing extra. You get them both by simply insisting on Goodyear No-Rim-Cut tires.

Our tire book tells how Goodyear tires have been gradually perfected through 12 years of ceaseless experimenting. It tells a hundred facts which motor car owners should know. Ask us to send it to you.

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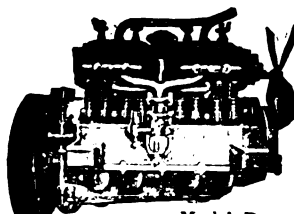
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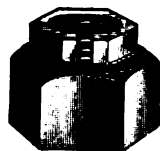
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Easiest to Operate
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3 sizes—1-ton, 2-ton and 3-ton
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Boards to fit dash. Quick shipments. Write for
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HESS - BRIGHT Ball Bearings

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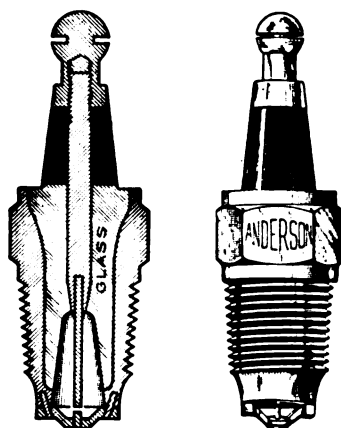
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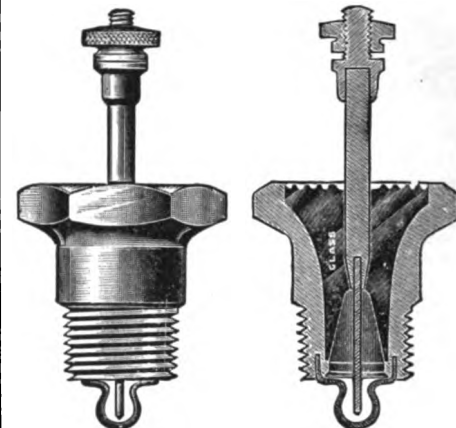
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Licensed Price, \$1.50

**"A Window to
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Glass Insulation, the Glass
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Absolutely the Strongest,
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Plug on the Market, Al-
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Anderson Glass-and-Steel Spark Plugs now are offered in a new model with small diameter shell and a mica stem, styled the Model B. The basic principle of glass insulation welded to the steel shell and central electrode into one integral mass obtains in both models, and the flash of the explosions is shown through the glass insulation of Model B as in Model A.

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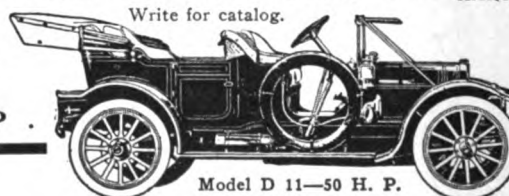
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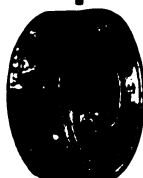
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VASCO

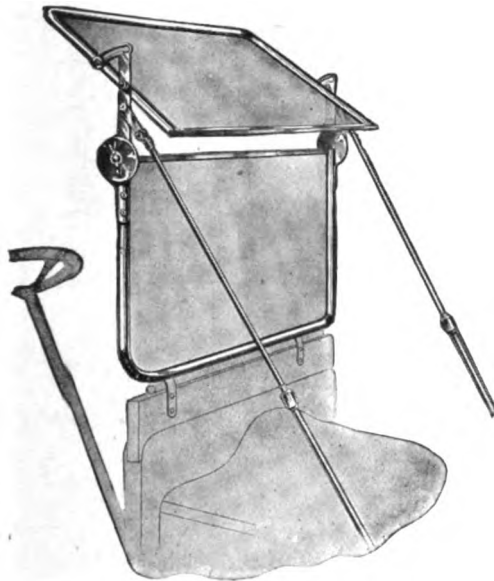
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The market is overloaded with low priced Wind Shields, yet the demand is growing for a Shield of QUALITY. We are able to supply this demand with this Shield of distinction, and owe much of our prestige to the Vasco.

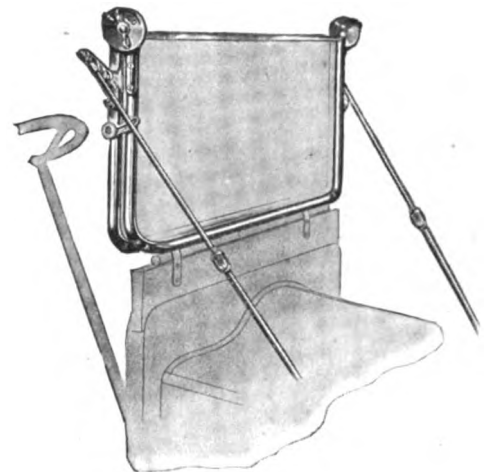
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Clear Vision. Semi-Clear Vision.
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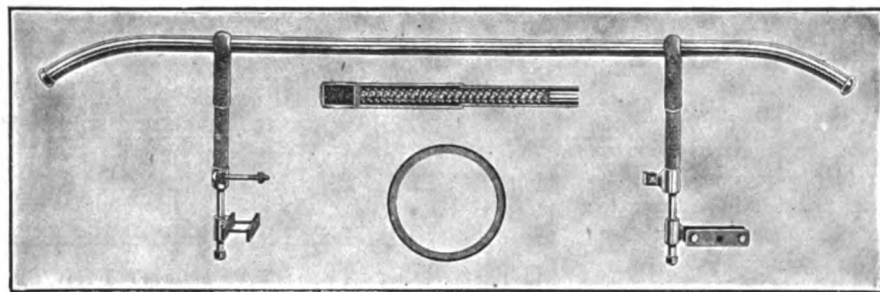
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43 "	42.50
41 "	Semiclear Vision.....	42.50
43 "	" " ".....	45.00
41 "	Clear Vision.....	45.00
43 "	" " ".....	47.50



Position for Rain View—For rain or snow you see the road between the sashes with clear vision.



Folded Position—Breaks in the middle passing the steering wheel of any car.



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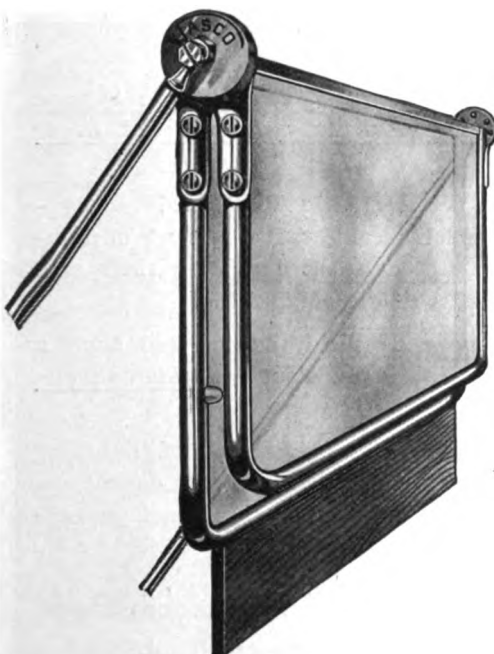
VASCO 1912

36 or 41 Inch	\$25.00
43 Inch	27.50

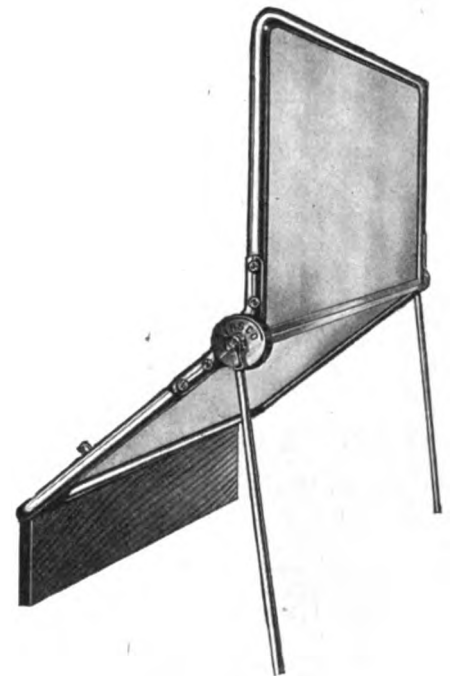
The VASCO 1912 Shield is a three position Shield; it operates on ball bearings; mechanism encased in a dust-proof chamber.

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Races—particularly the grinding long races of 100, 200 and 300 miles—are the real test of motor car construction. And no car, regardless of cost, has approached the wonderful, mechanical record of National cars.

In beauty and comfort Nationals excel as much as in performance. No car at any price can offer more than the National 40 at \$2,500 and \$2,600.

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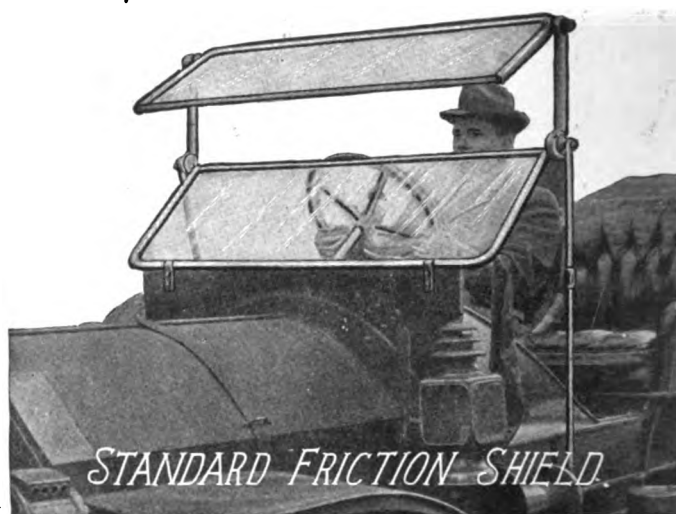
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The STANDARD FRICTION Shield has been bought by the most progressive dealers and the largest jobbers.

With few exceptions, our customers have trebled their first purchases with the second order. And the season is more than a month off.

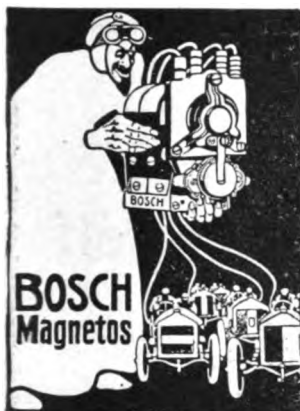
Most of our customers are specializing on The STANDARD FRICTION. A score of the biggest jobbers are handling it to the exclusion of all other shields.

ALSO—The STANDARD FRICTION is considered so good mechanically, that a number of manufacturers of the best cars are equipping their cars with STANDARD FRICTION Shields.

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You surely realize the advantage of handling STANDARD FRICTION Shields. If you do not, we will go further and send you our convincing trade prices.

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Bosch - Equipped Cars WIN In Panama Pacific Race

San Francisco, February 22, 1911

THE FREE-FOR-ALL — 207 Miles — Won by

<small>Car</small>	<small>Driver</small>	<small>Magneto</small>
Pope-Hartford	Dingley	Bosch

THE LIGHT CAR RACE — 98 Miles — Won by

<small>Car</small>	<small>Driver</small>	<small>Magneto</small>
Mercer	Bigelow	Bosch

Dingley in Bosch-Equipped Pope-Hartford also won second place in Heavy Car Race.

Thus Bosch Magnetos triumph in first important 1911 race after winning 42 of the 44 long distance races of 1910.

BOSCH MAGNETOS Also Triumph at the Shows

SHOW	Cars Exhibited	Bosch Equipped
London	589	453
Paris	466	331
Brussels	343	286
Madison Square Garden		
1st Week—Pleasure Cars	311	204
2nd Week—Trucks and Motorcycles	186	130
Chicago Show		
1st Week—Pleasure Cars	365	230
2nd Week—Trucks and Motorcycles	189	107
Total Cars Exhibited	2449	
Bosch Magnetos were used on		1741
<u>1741 of the 2448 Show Cars used Bosch Magnetos</u>		

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You Simply Can't Crack the Reflector or Break the Lens in your Acetylene Lamp if you use the Bray RONI Burner

Because if anything goes wrong with the RONI the flame shoots upwards where no damage can be done.

With other burners, a long flame shoots backwards, and away goes your reflector. If it don't go backwards it goes forward, and then snap goes your lens. Either way it costs you many times the cost of the burner to make repairs.



**Another nice feature:
when you use a Roni
you never need a
Cleaning Needle**

When your burner needs attention, you simply rub the top of the RONI with an old brush or the tip of your finger, and the burner is again as good as new. A whole lot more convenient than trying to find that little hole with a fine needle on a dark night; and after you clean the RONI, it's again as good as new.

For Sale at Your Dealer's

MADE ONLY BY

WILLIAM M. CRANE COMPANY

16-18-20 West 32d Street

New York

The Ball Bearing That Advertises Itself



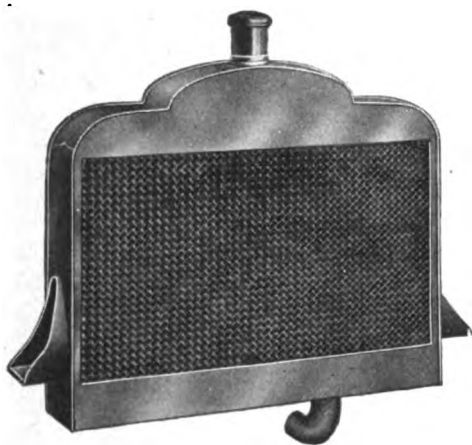
Through Results

Send for Booklet W.

R. I. V. COMPANY

1771 Broadway

NEW YORK



NOYE MFG. COMPANY, Radiators

BARNES GEAR CO., Steering Gears

**COOK SPRING COMPANY, Valve and
Clutch Springs.**

Sales Agents:

CENTAUR MOTOR CO.

510 Majestic Building

DETROIT, MICH.

"The Sign of Quality"
Fifteen Models
— 30,
35 and
40 h. p.—
\$1450 to \$2000

**STAVER
CHICAGO**

Write for our interesting dealers' proposition

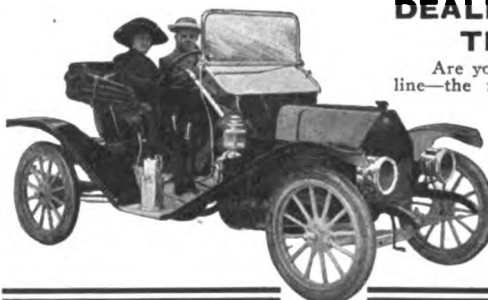
Staver Carriage Co., 76th and Wallace Street, Chicago.
Dept. 9013

The Car of 1911 is the "Henry"

Just to say, "1911 Model" does not describe any Henry. The verdict of Henry dealers this month is, "The Henry is the car of 1911." Sales are big. Territories going. Men who have grown gray buying motor cars declare it their choice first, last and all the time.

DEALERS WHO WANT THE LEADER

Are you acquainted with the Henry line—the fine power, type and price combinations from \$900 to \$2200; big, roomy, solid-comfort cars? To know the Henry is to want territory. Ask us to send the Henry catalog and proposition.



Henry Motor Car Sales Co.
1507 Michigan Ave. CHICAGO, ILL.

The *Marion* is Strong in Every Detail

¶ Every part is a feature. There is no chance for something to put something else out of work, and start a general derangement. All parts of the MARION work in harmony. In the MARION you get precision and sureness because of a correct relation of working members.

¶ Ask some seasoned owner about his experience in running a car, about what has happened to him, about the times he has been stranded, about what caused him trouble and expense.

¶ You will find out sooner or later that you must be wary of cars sold on the strength of a few special features—a special axle construction, or crank shaft or clutch. Because a few special features such as these can equal the best in the world and still the rest of the car will handicap them and surely bring them to grief.

¶ Now—what have we been insisting upon in regard to MARION quality right along? What have we been planning and working on for years? A car, sound, true, absolute down to the thousandth part. Every part is a masterpiece—motor, clutch, universal joint, transmission, gears, axles, wheels, frame and right on to the most insignificant bolt or nut. These perfections have been contributed by the best thousand men in the motor car industry.

¶ At \$1150 or \$1700, the MARION 1911 models are the first choice of a great many experts. If given a fair chance your judgment will agree. Send for free catalogue today.



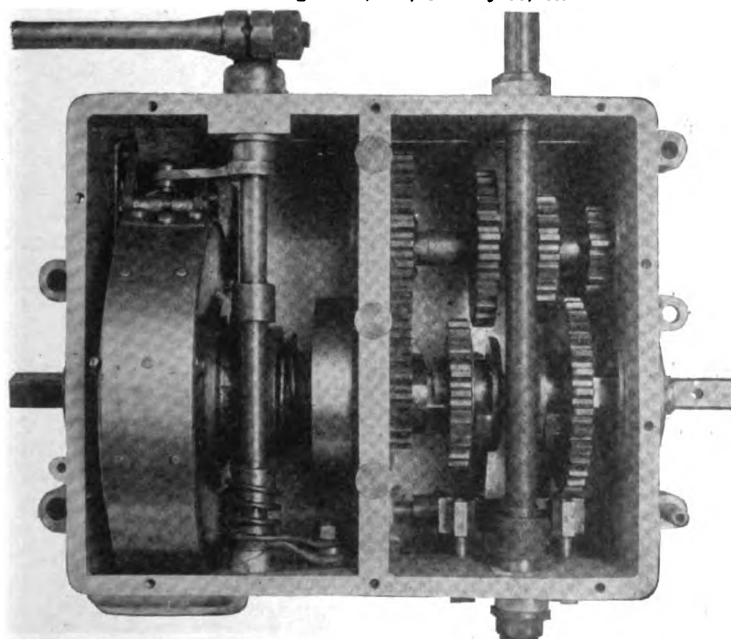
The
Marion Sales Co.
Indianapolis, Ind.



THE GARDNER AUTOMATIC ENGINE STARTER AND TRANSMISSION AS A UNIT

Weight of Starter 50 lbs. Battery or magneto ignition. Spins the engine at the rate of 300 revolutions per minute.

Patented August 18, '08; January 31, '11.



Gardner Starter and Transmission for FRANKLIN G-1911 Runabout

YOU are easily satisfied if you now buy a hand-cranking car. There are cars on the market regularly equipped with starters, such as the WINTON SIX (compressed air), AMPLEX (compressed air) and the LAMBERT (mechanical), etc., but you ought to demand THE GARDNER AUTOMATIC ENGINE STARTER because it is built into the car and is a part thereof, which is the only logical method. Any starter hung on to a car is but a make-shift at best.

THE GARDNER AUTOMATIC STARTER whirles the engine by a compound spring which sets all parts in motion before ignition occurs and protects the engine from shocks.

We are now prepared to furnish The Gardner Starter to owners of Franklin "G" 1911 runabouts (price \$100) and Ford Model "T" 1910 and 1911 (price \$75) F. O. B. Chicago.

Gardner Engine Starter Co. (Inc.)
1451-1453-1455 Michigan Ave. CHICAGO, ILL.

THE ECONOMY IS ECONOMICAL

Because of Unit Assembly



TWO CAPACITIES—1000 LBS. AND 2000 LBS.

Economy Engines can be entirely removed or replaced in 45 minutes, transmission in 35 minutes, radiators in 15 minutes and jack shafts in 20 minutes. Either part without disturbing the other two, and all without disturbing the body.

This spells economy and convenience.

Back of it all is one of the largest exclusive truck factories in the west.

Send us an inquiry and let us show you why.

ECONOMY MOTOR CAR COMPANY, Bissel and Cass Streets, Joliet, Ill.

The Pioneers to Employ 92%
of Balls in the Raceway



SCHAFER Ball Bearings Fear No Comparison

Most of the prominent races and endurance tours of 1910 were won by "Schafer Equipped Cars."

Our combination radial and thrust bearing is now ready. Send for details.

WRITE FOR CATALOGUE

SOLE IMPORTERS

BARTHEL, DALY & MILLER, 42 Broadway, New York City

Casette

PROTECTOR OF INNER TUBES



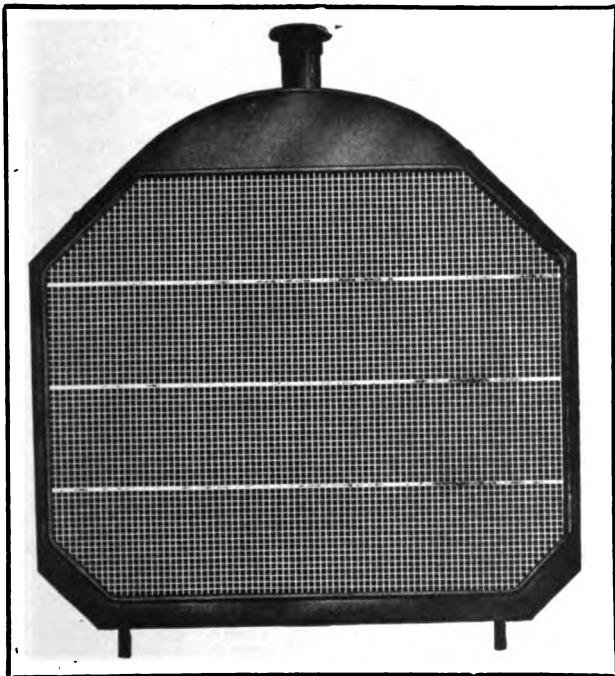
"CASETTE" is made of our special Gutta-Percha felt and is practically non-puncturable. Being loose at the inner tread is an important factor, as this allows a slight depression on the air tube at the point of contact with a sharp object. The "CASETTE" engages the object at this instant, and the wheel, turning, gives an oblique pressure on the sharp object and the air tube is protected. It is easily inserted and the low price commends it. *Everybody wants it.*

Weight of Casette 2½ lbs.

Why not represent us in your city?

GOODFELLOW TIRE CO. Woodward and East Grand Boulevard
DETROIT, MICHIGAN

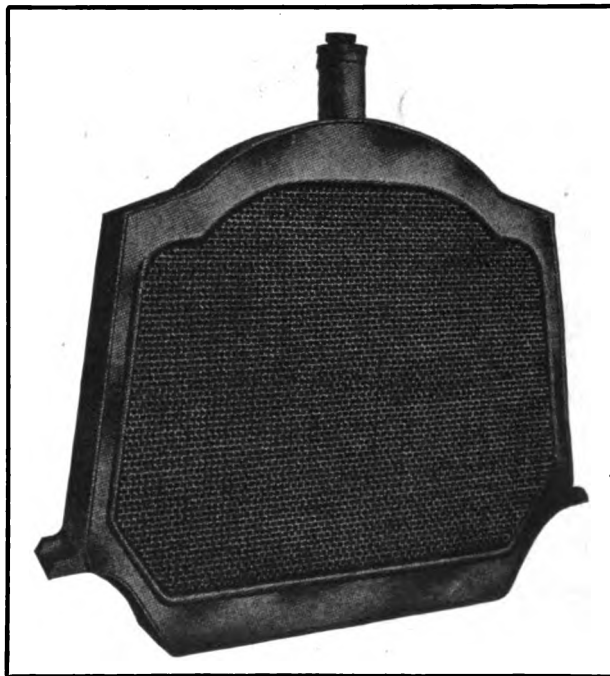
FEDDERS REAL SQUARE TUBE RADIATORS



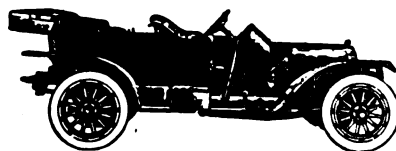
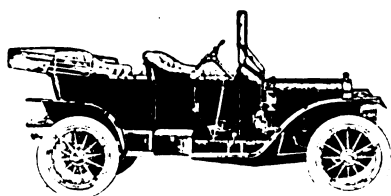
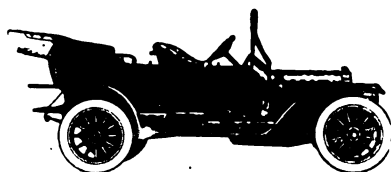
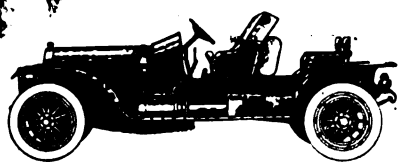
No square tube "effect" or imitation, but made of individual square tubes. Of course the real square tube is better, that's why the others imitate it in appearance. They can't make the real article at the price.

Furnished with tubes staggered or Mercedes finish, as shown on cuts.

See Fedders Radiators on such cars as Packard, Thomas, Pierce, Haynes, Matheson, National, etc.



FEDDERS MANUFACTURING WORKS, Buffalo, N. Y.



The *Knox* Car

BEST BY TEST

is the
High Grade Product of a High Grade Factory

Built for the *Man* who wants something better than the average run of motor cars—the *Man* who has been through the game and who wants a car with an individuality of its own.

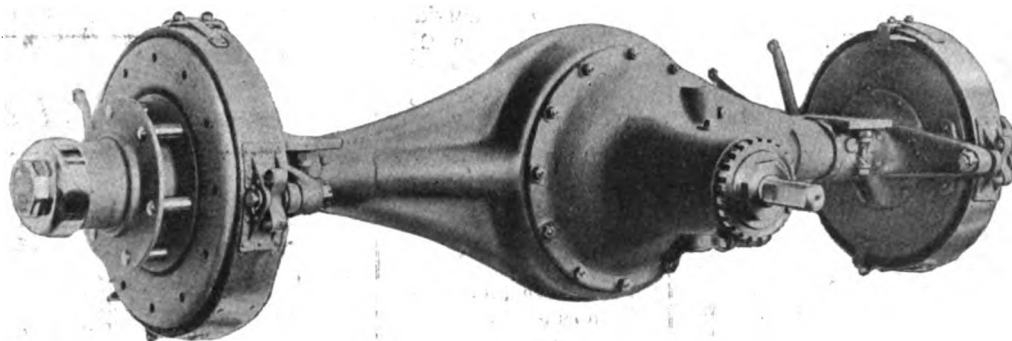
Known from coast to coast through its remarkable series of speed victories and endurance contests, the Knox car is manufactured by one of the old original automobile factories who work into their product the lessons of long experience and the very best of Foreign and American design. It is honestly made from the best material the market affords.

From \$3000 to \$6000 in Price

Our new catalog will tell you more.

KNOX AUTOMOBILE CO., Springfield, Mass.

Member A. L. A. M.



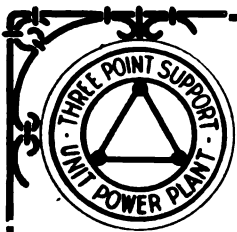
Full Floating Adjustable Type

- ❑ Driving member is inserted as a unit and may be adjusted in place.
 - ❑ Housing is stamped from sheet steel. This construction provides strength at the points where the strain is the greatest.
 - ❑ Internal and external brakes are 14 in. diameter.
 - ❑ Axle Shafts are made from alloy steel "Heat Treated" so as to give the highest physical properties possible.
 - ❑ Pinion and driving shaft are integral. Forged from alloy steel "Heat Treated." Teeth are planed.
 - ❑ Can be equipped with annular or roller type bearings.
- ❑ The design, material and workmanship on this axle are of the highest quality.

Write Us Regarding Your Requirements

THE AMERICAN BALL BEARING CO.

L. S. & M. S. Ry. and Edgewater Park
CLEVELAND, OHIO



Stevens-Duryea Motor Cars

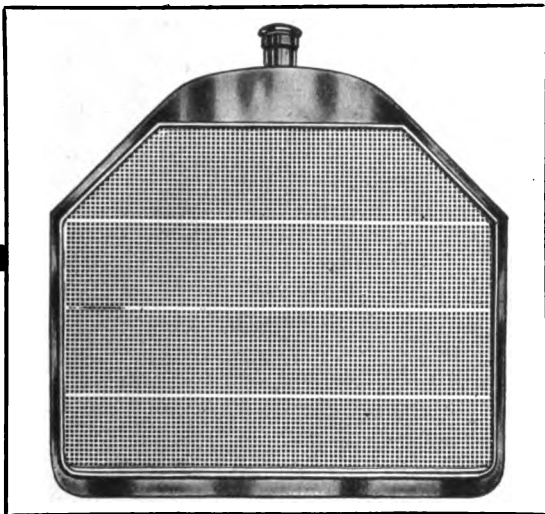
Built 'Round a Principle

¶ The remarkable care exercised in design, manufacture and test of each detail of the Model AA is proof of the genuine and sincere intentions of the manufacturers. It is also a guarantee of good running and silence.

¶ The splendid reputation of Stevens-Duryea Motor Cars is wholly warranted by the un-failing satisfaction they have given and are giving.

*Our literature has plain facts
plainly told. Write for it today.*

STEVENS-DURYEA COMPANY
Chicopee Falls, Massachusetts



THE BUSH RADIATOR FOR 1911

IN EFFICIENCY—The Highest
IN APPEARANCE—The Finest
IN CONSTRUCTION—The Simplest
IN SERVICE—The Most Satisfactory

"The Most Practical Radiator"

Ask those who have used them in 1909 and 1910.

THE BUSH MFG. CO., Hartford, Conn.

Mosler Spit Fire

THE PLUG
WITH THE DEEPEST CHAMBER

Leads the World

READ NOTICE! READ

Our SPIT-FIRE Plugs are for sale by
all legitimate dealers and jobbers.

If you cannot get a delivery—
THERE'S A REASON!

— WRITE US DIRECT —

WE CAN SHIP ON TWENTY-FOUR HOURS' NOTICE

Dealers and jobbers beware! We protect our trade mark

PACKED IN THIS BOX

FOR YOUR PROTECTION

DON'T BUY IMITATIONS

A. R. MOSLER & CO. 163 W 29TH ST. NEW YORK.

AJAX TIRES

Guaranteed 5000 Miles

**The only tire that can live up
to such a liberal guarantee.**

IN order to give 1500 more miles than any other
tire, Ajax Tires are necessarily made just
that much better.

BBETTER materials, better workmanship and
improved methods enable us to save the
motorist 30% on tire costs.

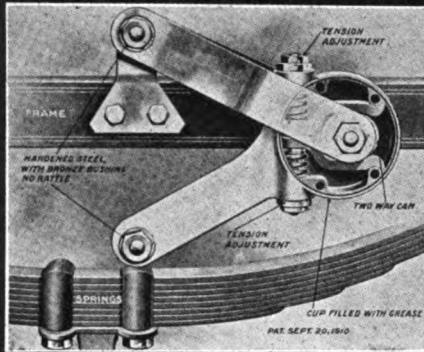
THERE is no risk in trying an Ajax Tire—
the guarantee is an absolute protection.

Start in saving tire money today.

AJAX-GRIEB RUBBER CO.

General Offices: 1796 Broadway, New York
Factories: Trenton, N. J.

BRANCHES: New York, Boston, Philadelphia, Atlanta,
Detroit, Chicago, Kansas City, Minneapolis, Denver, Seattle,
Portland, San Francisco, Los Angeles, Milwaukee, St. Louis.



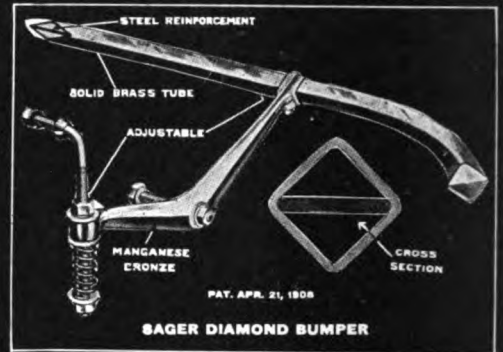
PEERLESS SHOCK ABSORBER

Peerless Shock Absorbers ABSORB SHOCKS

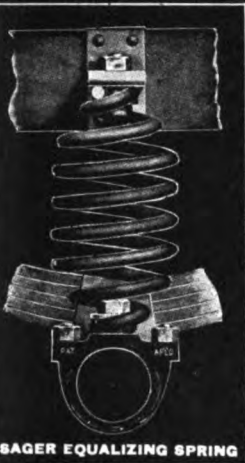
Not a friction device; therefore free in action. Its resistance is proportioned to its load. It is automatic. 60 DAYS FREE TRIAL will convince you.

Sager Diamond Bumper

Mechanically perfect, also artistic. Strongest made. Beyond reach of criticism. Practical and economical form of car insurance.



SAGER DIAMOND BUMPER

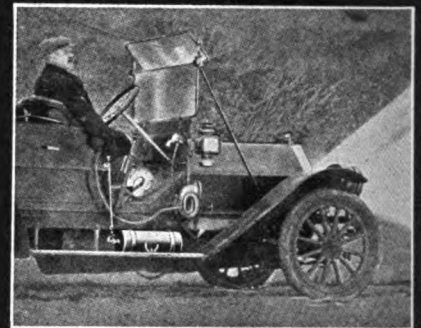


Sager Equalizing Springs

Have proven their worth through seven years of success. Endorsed by 18 manufacturers. 60 DAYS FREE TRIAL.

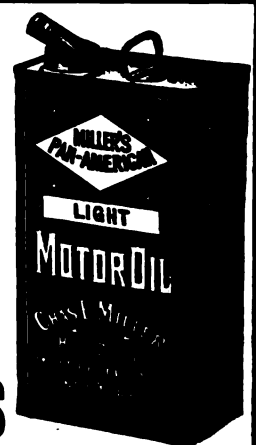
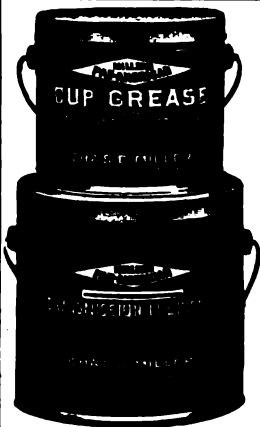
Spark-O-Lite

Teaches the error of the old way. It's a torch in the darkness. Operated from the seat while car is moving. Economical and easy to install.



SPARK-O-LITE

J. H. SAGER CO.
ROCHESTER, N. Y. 269 South Ave.



MILLERS' Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles. In order to convince you of the efficiency of these oils we are willing to make you a special price for an initial order, much lower than usually quoted on other high grade oils.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Special Prices for Manufacturers, Jobbers and Dealers

ADDRESS OIL DEPARTMENT

CHAS. E. MILLER, MANUFACTURER, JOBBER, EXPORTER AND IMPORTER
Home Office, 97-99-101 Reade St., New York City
The Largest Auto Supply House in America.

BRANCHES—Philadelphia, Boston, Cleveland, Detroit, Buffalo, Hartford, Atlanta, Brooklyn, New York City, New Orleans, Springfield.

Is Your Automobile Rust-Proof?

If not, it is an inferior car.

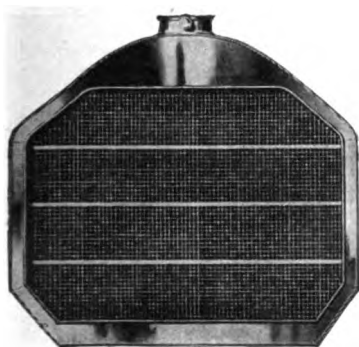
ALUMALOYD SHEETS Are Rust-Proof

Bodies and parts made from these sheets will not rust—and the surface of AlumaLOYD Sheets is such that it requires no filler, putty-glaze, primer and rough coats to secure a perfect finish.

Let us send you samples and details.

THE ALUMALOYD PRODUCTS CO.
Canton, Ohio

LET US FIGURE WITH YOU ON



Our New Cellular

Radiators, Fenders, Pressed Steel Frames, Mufflers, Tanks, Hoods, Mechanical Oilers, Underpans, Brake Drums, Battery and Tool Boxes, Fans, Brass Moulding, Foot Rests, Rube Rails and Stampings of All Kinds.

Write for New Catalog

THE KINSEY MANUFACTURING COMPANY
Toledo, Ohio

KEEP DOWN THE UP-KEEP



There never was and there never will be a mineral oil that won't sooner or later cause magneto trouble. And Cylinder oils—even the best, the costliest, are mineral oils. They all eventually clog delicate bearings.

3-in-One is the very best oil for magnetos because it won't gum, dry out, harden, gather dirt; heat up, smoke, burn. It keeps the bearings "clean as a whistle"—makes the magneto run like magic.

3-in-One is the best preparation for polishing and preserving the varnished surfaces and all leather parts. Also preventing rust on all metal parts.

8 oz. 50c.—3 oz. 25c.—trial size 10c. All garages and supply dealers. Write for FREE SAMPLE today.

3 IN ONE OIL CO., 64 Broadway, New York.

Solar Users Are the Best Solar Advertisers

It isn't because we advertise, it isn't because of any special salesmanship we possess, that most of the high-grade American cars are today equipped with Solar Lamps.

It takes more than good advertising or good salesmanship to make a car manufacturer pay out thousands of dollars more for his lamp equipment each year.

It's because the vast army of Solar users have spread abroad through the motoring public the knowledge that Solars are the only absolutely, reliable, dependable and satisfactory lamp equipment.

Even when a car maker doesn't equip regularly with Solar Lamps, he'll furnish them if you insist on them.

Have him put Solars on your car, and join the great army of those who have abolished lighting troubles.

We should like to place our interesting free catalog in your hands.



Badger Brass Mfg. Co.

Kenosha, Wis.

New York City

Pressed Steel Work and STAMPINGS for Commercial Cars A L L S I Z E S

OUR plant equipment is of the largest and most complete kind; our experience dates from the beginning of the automobile industry and our reputation guarantees the quality of the product. We are ready and willing to lend a helpful hand to builders and have a fund of valuable information which is at their disposal. Write us.

THE CROSBY CO., Buffalo, N. Y.

VULCAN GEAR WORKS

PONTIAC MICHIGAN
MANUFACTURERS OF CUT GEARS



Automobile Gears a Specialty

DIFFERENTIALS — TRANSMISSIONS — STEERING GEARS

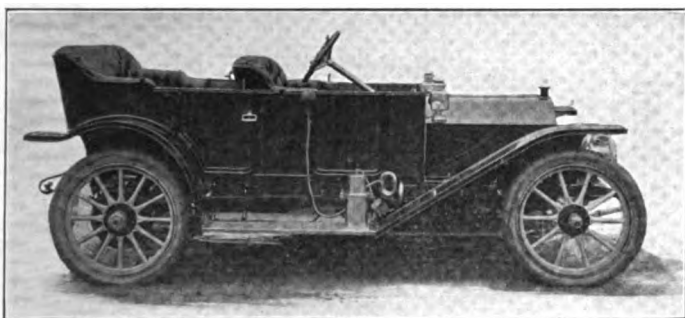
SEND BLUE PRINTS FOR QUOTATION



You Can Pay More

for an automobile, but if you spend twice the amount of money you can obtain no more intrinsic value in materials, quality of workmanship or design; nor a car that will run as well and give more lasting satisfaction than a

Pullman



Model O Vestibuled Touring Car.

"Pullman automobiles are worthy of their name"

The PULLMAN car has solid strength of construction that means freedom from repairs. It has the power, the speed, the size to take you anywhere and at a low consumption of gasoline and oil.

The PULLMAN is an exceptionally powerful and reliable car that is built to fulfill every requirement of touring. Every part bears a perfect relation to every other part, which makes the PULLMAN a perfectly proportioned car—a car in which the correct suspension of every part greatly reduces the wear on tires.

In 1910 the PULLMAN won every endurance and speed contest in which it was entered, several times defeating cars of three times the PULLMAN cost and horsepower.

"Pullman Performances Prove Its Perfection"

Prices \$1650 to \$4000; 30, 35 and 50 Horsepower

Write for catalog and testimonials of owners.

PULLMAN MOTOR CAR CO.

Drawer W

YORK, PA.

What you want is an ignition battery that, charged or discharged, won't deteriorate no matter how long your car stands idle.

The Edison Storage Battery

(five-cell size, enclosed in a steel battery box ready to bolt on the running board of your car)

is the practical solution of the problem of successful and reliable ignition—not only from the standpoint of non-deterioration, but because its weight, for ignition purposes, is only 72 per cent that of a lead battery of equal capacity—and this capacity actually **increases** after the first few discharges.

The Edison is not injured by overcharge, by too rapid or even complete discharge, nor is there any automatic discharge.

It is built throughout to withstand the severest usage and vibration—the container is welded, corrugated, nickered steel.

It requires no attention, other than keeping the cells clean externally and filled with distilled water.

The Edison Storage Battery for ignition purposes is guaranteed for five years. Write today for complete information.

The Edison Storage Battery Company

116 Lakeside Ave., Orange, N. J.

**A Complete
Line
for
the Agent**

**4 Cylinder Cars
24 to 40 H. P.
\$1500 to \$2250**

Write for catalogue
and territory.

KLINE KAR

**Kline Kar
Owners
Are Satisfied
Customers**

**6 Cylinder Cars
50 and 60 H. P.
\$2650 to \$3250**

B C K MOTOR CAR COMPANY, York, Pa.

ARNOLD ALARM

**The Perfect Electric Signal for
Automobiles and Motor Boats**

Send for Special Offer. The best retailers
proposition ever presented. Send now.

STANDARD ELECTRIC WORKS, Dept. H, Racine, Wis.

The Royal Equipment Co.

Manufacturers of

TRADE MARK
Raybestos

BRAKE LINING

and

The Raymond and Duplex Brake

436 Housatonic Ave., BRIDGEPORT, CONN.

CONNECTIGUT

MAGNETO

Powerful and Unfailing

Send for Catalog No. 54

CONNECTIGUT TEL. AND ELECTRIC COMPANY, INC.
20 Britannia Street Meriden, Conn.

Woodworth

WOODWORTH TREADS are the only true tire protectors. They never chafe or heat the tires. They are held in place by coil springs along the sides, which automatically take up all slack and prevent any looseness. The protector is always tight and smooth.

No other protector can be fitted in the way that these automatically fit themselves.

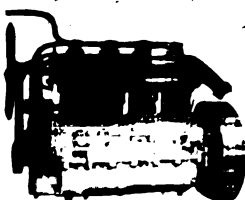
They fit all makes of tires—anyone can easily put them on. Send for Catalogue.

Leather Tire Goods Co., Niagara Falls, N. Y.
Canadian trade supplied from Niagara Falls, Ont.



RUTENBER

MOTORS



now can be had in 18 makes of pleasure cars and in 10 makes of commercial cars, and the number is rapidly growing. Why? Because—"They're the best." Place your orders early for prompt deliveries.

THE WESTERN MOTOR CO.
MARION, IND. LOGANSPOUT, IND.
Sales Department, Marion, Ind.

HEAT-TREATED AUTOMOBILE FRAMES

Crucible Chrome Nickel
Steels and Our Own Special
Alloys Used Exclusively.

PROMPT DELIVERIES

PARISH MFG. CO., Reading, Pa.



Send for a Booklet which gives a complete description of the Kamlee Trunk—it tells how it is built, (of bass wood veneer, not pulp composition), how strong and durable it is, and just why the

KAMLEE Auto Trunk

is the only trunk that meets all the requirements of the motorist. There is a "Kamlee" for you, no matter what your car may be—it is built to conform to the shape of the tonneau of any make or type of car. Your name and address on a postal will get the booklet.

The Kamlee is fully protected by patents, and any infringements will be vigorously prosecuted.

The Kamlee Co.
345 Milwaukee St.,
Milwaukee, Wis.

It isn't a Kamlee if this trademark is not on the front—in red and gold. Look for the "K."



Could you Stop Short in a case like This?

You can lock the wheels of your car almost instantly if the brakes are lined with J-M Non-Burn Brake Lining. Impartial tests prove this.

This lining grips the drum with a vise-like grip because it is made of asbestos, which means a mineral lining against a metal drum. This gives the greatest braking efficiency known to engineering science. Yet, with less pressure on the brake lever, you can stop just as slowly as you wish.

J-M NON-BURN BRAKE LINING

is also practically indestructible.—Frictional heat cannot char or burn it; oil, gasoline or water cannot injure it.

Be sure to get J-M Non-Burn and your car will always obey the slightest pressure on the brakes. The name is plainly stamped on every few feet of this lining. Don't take chances with cheap substitutes.

If your dealer won't supply you, write us for name of one who will. Ask our nearest branch for sample and booklet, "Practical Pointers on the Care of Automobile Brakes."

H. W. JOHNS-MANVILLE CO.

Baltimore	Cleveland	London	New Orleans	San Francisco
Boston	Dallas	Los Angeles	New York	Seattle
Buffalo	Detroit	Milwaukee	Philadelphia	St. Louis
Chicago	Kansas City	Minneapolis	Pittsburg	(1236)

FOR LONG RANGE - FOR SHORT RANGE

SIRENO

ELECTRIC HORN

The choice of motorists who realize the need of a long range warning and the value of press-the-button operation, yet who desire not to startle or offend those whom they warn. It is the signal of a gentleman and a careful driver.

The Sireno Company
705 Taylor Building
NEW YORK CITY



on that new Truck, specify

"Firestone"

Quick Removable SIDE-WIRE TIRES

and end your tire troubles before they begin

THE FIRESTONE TIRE & RUBBER CO.
America's Largest Exclusive Tire and Rim Makers
Akron, Ohio

FORGINGS

We specialize on FORGINGS. Let us have a look at your specifications. Also see our catalog of stock forgings always on hand.

Billings & Spencer Co.,
HARTFORD, CONN.



You Can Always Depend On Reliance Spark Plugs

Get our new 48-page book—"Ignition and Spark Plug Talk" \$1.00

FREE—The most complete, comprehensive and condensed vest pocket reference book ever published on the subject. Full of valuable hints. Tells just what you want to know about Ignition, etc.—makes you master of your own ignition system. Write at once for a copy.

JEFFERY-DEWITT CO.
65 Butler Ave., DETROIT, MICH.




Empire Tires

WEAR LONGEST

EMPIRE TIRE CO., Trenton, N. J.

Regal 30

"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

\$1250


Runabout, Baby Tonneau, Touring Car, Coupe

Greatest Automobile Value in America

WRITE FOR OUR LITERATURE

REGAL MOTOR CAR COMPANY, Detroit, Mich.

Heinze High Tension Magneto



Construction—Mechanically unequalled.

Durability—Greater than the life of the car.

Efficiency—Proven by the users.


Catalogue H with full information is yours for the asking.

HEINZE ELECTRIC COMPANY
Lowell, Massachusetts

MERCER

TOURING CAR
TOY TONNEAU
SPEEDSTER

Each \$2150



Style, Luxury, Quality, Strength, Speed.

Made Right and Stays Right

Let us hear from you.

MERCER AUTOMOBILE CO., Box 126, Trenton, N. J.

You can buy

Rebuilt Thomas Flyers

and other makes practically as good as new which are cheaper and better than some new cars. Prices range from \$750 up. Second-hand small cars taken in exchange.

E. R. THOMAS MOTOR CO., BUFFALO, NEW YORK

New York Branch: Broadway and 63d Street
Boston Branch: 915-921 Boylston Street
Chicago Branch: 2255 Michigan Avenue

"Gramm"

THE STRONG POINTS—

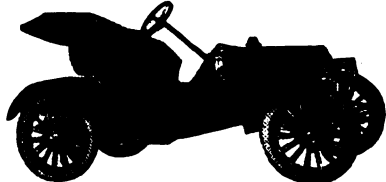
- Three Point Suspension.
- Gramm Multiple Disk Clutch.
- Gramm Roller Spring Suspension.

The Gramm Motor Car Co.

101 So. Lima St. LIMA, OHIO

New York Headquarters—CROSS-MAGILL MOTOR TRUCK CO.,
30 Church St., New York

Metz 1911 Runabout



Every car fully equipped exactly as shown

\$485

EQUIPMENT—Bosch magneto, top and slip cover, gas lamps and generator, oil lamps, horn, 28 x 3 standard clincher tires, and set of tools.

GOOD DEALERS WANTED IN UNOCCUPIED TERRITORY.

METZ COMPANY, Waltham, Mass.



1911 CATALOGUE READY

CORBIN MOTOR VEHICLE CORPORATION
New Britain, Conn., U. S. A.
Licensed under Selden patent.

THE AMERICAN

"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading cities. Increased output this year offers a new opportunity to buyer and dealer alike.



SEMI-TORPEDO TRAVELER

Underlying frame; 40 in. wheels; 4 cyl.; 50 H. P., \$4250.

AMERICAN MOTORS CO., Dept. V, Indianapolis, Ind.
Licensed under Selden patent.



"The car with the invisible start."

96 in. wheel base
32 in. wheels **22½ H. P. \$800**

Sliding gear transmission. Multiple disc clutch. Weight, 1200 lbs.

Runabout \$900.
Roadster \$825.
Surrey \$850.

Write for Catalog
K-R-I-T Motor Car Company
DETROIT



\$1,600 Cartercar

Model "L," 4 cylinder, 30-35 H.P., 110 inch wheel base, 5 passenger, Friction Transmission, Chain-in-Oil Drive, any number of speeds, will climb a 50% grade with load, including magneto, gas lamps, generator, horn, mats, tools, jack, etc. \$1,600.

Model "H," 4 cylinder, 25 H.P., 100 inch wheel base, Runabout \$1,100. Double Rumble \$1,125. Double Divided Rear Seat \$1,150. Miniature Tonneau \$1,150.

Write for 1910 catalog.

CARTERCAR CO.

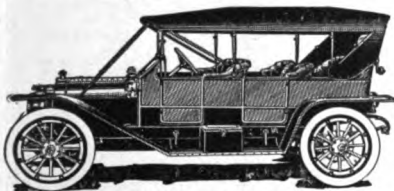
Pontiac, Mich.

Licensed Under Selden Patent.



WRITE FOR INFORMATION ABOUT

THE SELDEN CAR FOR 1911



With complete touring equipment, from \$2250 to \$2800

Good territory still open for live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.
GEO. B. SELDEN, Pres. Licensed under Selden patent

The Selden Car stands for every desirable development in the automobile—from the powerful perfectly constructed engine to the evenly balanced quality parts that go to make the finished car.

A wide range of body styles and prices. Roadster, touring and torpedo bodies. New four and six passenger torpedo bodies with fore-doors.



GUARANTEED FOR LIFE

The most economical car in the world

Runabout	\$750	Touring Car	\$900
Torpedo Runabout . . .	\$850	Coupe	\$1100

HUPP MOTOR CAR COMPANY

Dept. K

DETROIT, MICH.



SIXTEEN MODELS

Hill Climbers

A most complete line, both pleasure and commercial, ranging in price from \$650 to \$1750.

A CAR FOR EVERY ARGUMENT
YOUR TERRITORY MAY BE OPEN

Write today — Desk A

MAYTAG-MASON MOTOR CO., Waterloo, Iowa



Unit Power Plants

Keep Oil In and Dirt Out

Model 51—\$2200

Model 41— 1700

Model 38— 1650

Model 35— 1250

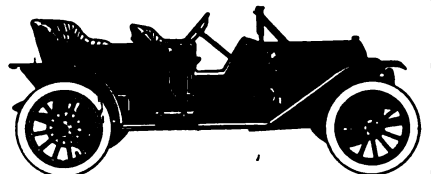
Model 30— 1250

Model 25— 1100

All touring models fitted with removable front doors and panels at a slight extra charge.

Jackson Automobile Co.
Jackson, Mich.

Licensed under Selden Patent



Moline

"King of the Road"

THE latest addition to the "Dreadnought" Moline 1911 Models. Beautifully finished in a rich dark grey, heavy nickel and black enameled trimmings. Price includes zig-zag windshield, five lamps and full kit of tools. Equipped with our famous



Fore Door, \$1700

4 x 6 Long Stroke Motor

with which we won Chicago Trophy in 1910 Glidden Tour and Team Trophy in 1000 mile Chicago run. Write for booklets on both runs and 1911 Catalog

TOURING TYPE, \$1650

TOY TONNEAU, \$1600

Some good territory for live dealers.

MOLINE AUTOMOBILE CO., 61 Keokuk St., E. Moline, Ill.

35 H. P.
112-in. Wheel Base
36-in. Wheels

Warner Gear Co.
MUNCIE, INDIANA



**Steering Gears
Transmissions
Differentials
Clutches and
Control Levers**

MODEL 95—UNIT TRANSMISSION
Brake and Clutch with Raybestos-faced Discs.
25-35 H. P.

The 1911 De Tamble

Model G—2-Passenger Roadster.....\$1,000

Model H—5-Passenger Touring Car.....1,150

Model J—5-Passenger Fore Door.....1,200

Model K—7-Passenger Fore Door.....1,675

You can't pay more and get your money's worth.

Catalogue and full details of our complete line sent on request. Open territory proposition for live dealers.

THE DeTAMBLE MOTORS CO. ANDERSON INDIANA

The *Paige-Detroit* 1911

4 Cycle—4 Cylinder Full 25 H. P. Motor **\$800**

Complete specifications and catalogue upon request

THE PAIGE-DETROIT MOTOR CAR CO.
245-255 Twenty-First Street Detroit, Mich.

Two Factories Now for

BROWN-LIPE GEARS

Transmission and Steering Gear Department
Operated by

BROWN-LIPE GEAR COMPANY

Differential Gear Department by

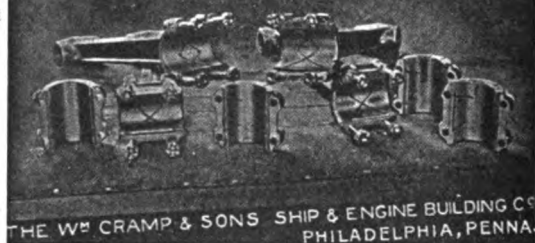
BROWN-LIPE-CHAPIN COMPANY

SYRACUSE, N. Y.

Capacity Immensely Increased

H. W. CHAPIN, General Manager

30,000 MILES WITHOUT ADJUSTMENT.
THESE PARSONS WHITE BRASS BEARINGS RAN
THAT DISTANCE IN A PACKARD CAR. THEY ARE BACK IN
THE CAR WITHOUT EVEN BEING SCRAPPED
STILL RUNNING RUNNING STILL.



**Cramp
—
Metals**

THE W. CRAMP & SONS SHIP & ENGINE BUILDING CO.
PHILADELPHIA, PENNA.

F & S

ANNULAR BALL BEARINGS

(Made in Germany)

The Dependable Kind—

J. S. BRETZ COMPANY

Sole Importers

MOTOR HALL, 250 West 54th St., NEW YORK

Write for catalogue
and specifications.

Abbott-Detroit

1911 MODELS
NOW READY

The Perfectly Standardized Car

ABBOTT MOTOR CO.
143 WATERLOO ST., DETROIT, MICH.

THE STANDARD UNIVERSAL RIM

Fits All Tires

THE UNITED RIM COMPANY

Akron, Ohio

Packard

CABLE

Is
Abso-
lutely
Sure

Don't take chances on the wiring of your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

Just put on Packard Cable and forget all about your ignition troubles
NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY
Send for samples and prices before ordering elsewhere
THE PACKARD ELECTRIC CO., 4328 Dana Ave., Warren, O.



**DO YOU WANT
DIE CASTINGS FREE**

from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?


Van Wagner makes that kind.

Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. WRITE US.

E. B. Van Wagner Mfg. Co., 706 Union Bldg. SYRACUSE, N. Y.

GLASSO

PREVENTS FOGGY WIND SHIELDS



Rub a little GLASSO on your wind shield and you are sure of a clear vision. Rain, snow or mist slides off glass that has been polished with GLASSO like water off a duck's back.

Glasso used

A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasso will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

Glasso not used

THE GLASSO COMPANY
Motor Car Equipment Co., Distributors
55A WARREN STREET NEW YORK

Pressed Steel Step Hangers



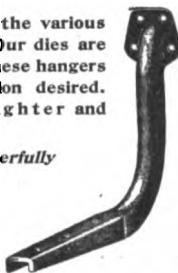
With ears
for attaching
mud apron.

These cuts show only two of the various styles of heads we can furnish. Our dies are so constructed that we can make these hangers with almost any drop or extension desired. Made from 5-32 inch steel—lighter and stronger than forgings.

Samples or blue prints cheerfully
furnished on request.

**PRICES RIGHT
PROMPT DELIVERY**

The Bossert Co.
UTICA, N. Y.



Plain
pattern.



DIAMOND CHAINS

are and have been the recognized quality standard for 20 years. Strong, accurate and durable. Let us cut your sprockets.

DIAMOND CHAIN & MFG. CO.
150 W. Georgia St. Indianapolis, Ind.
Capacity 8,000,000 feet per year.

PRESSED STEEL


Automobile Frames

Running Boards

AND

General Stampings

THE PARISH & BINGHAM CO., Cleveland, Ohio



Baldwin Chains

give that kind of service which the buyer has a right to expect from chains which have been chosen because of their well-known quality; accuracy in pitch and durability being especially distinguishing features.

BALDWIN CHAIN & MFG. COMPANY
Worcester, Mass.

SALESMEN—H. V. GREENWOOD, 166 Lake St., Chicago, Ill.; C. J. IVEN, Rochester, N. Y.; M. A. BRYTE, 788 Mission St., San Francisco, Cal.

MONEY SAVERS AND MONEY GETTERS

Atterbury Commercial Wagons and Trucks

FULL INFORMATION UPON APPLICATION

WE make vehicles for any kind of business, guarantee efficient service and as one of the oldest makers of commercial power-wagons our product is a known and fixed quantity. We can interest any merchant interested in effecting a business economy.

ATTERBURY MOTOR CAR COMPANY, Buffalo, N. Y.

LEST YOU FORGET

Write today for copy
1911 Catalog. Missing
means losing.

Ford Motor Company DETROIT, MICH.

FRANKLIN AUTOMOBILES

Besides saving in weight and complication Franklin air cooling removes all cause for worry, as there is not anything about the cooling to get out of order, freeze, overheat or break down.

A Franklin saves two thirds of the usual tire expense and at the same time goes faster and farther in a day than other cars.

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

BOWSER

Gasolene Storage Systems

Keep oil perfectly clean, safe and strong as when purchased. Systems Suitable in Style, Size and Price—for your individual need.

We make the lowest priced and we make the best systems.

Write for our new book—34. It's free and of interest for you.

S. F. BOWSER & CO., Inc., Ft. Wayne, Ind.

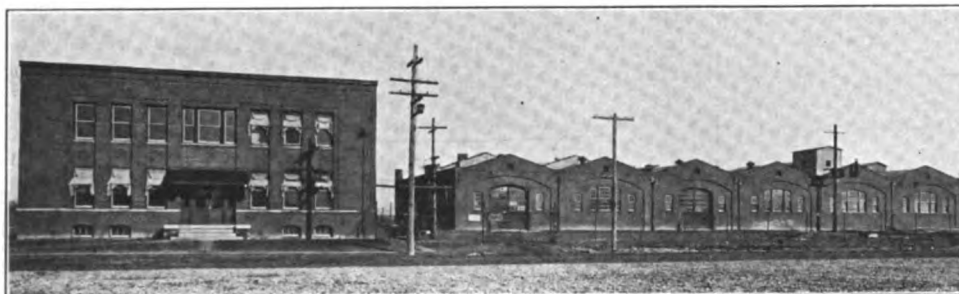
Boston, New York, Philadelphia, Chicago, San Francisco, Toronto, St. Louis, Minneapolis, Dallas, Atlanta.

Leading automobile manufacturers
equip their cars with the

Remy Magneto

year after year. Severest tests in the hands of thousands of owners have established Remy supremacy.

Specify the Remy Magneto on your new car and be assured of Satisfactory Ignition



Send Blueprints for Quotations to

WETHERILL FINISHED CASTINGS COMPANY, Philadelphia



For

Pressure Castings

of any metal and size desired, including Bronze, Aluminum Alloys and Bearing Metals.

The Klaxon and the Law

The first automobile laws, passed by different States, provided simply that automobiles be equipped "with a suitable bell, horn or other signal."

In other words, the necessity of some sort of signalling device was recognized.

Then, with the rapid growth of automobile traffic, some amendments were added—various in wording, but all to one effect: that this signal must be such as to give an adequate warning.

Constantly the tendency has been directly towards the adequate warning signal. Today the proposed amendments to several State laws center, with insistence, upon that one point.

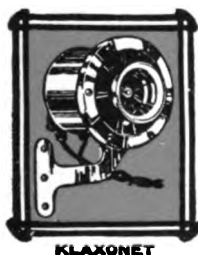
Now—

Adequate means that a signal shall have power enough to be heard far enough ahead, to be heard also under all circumstances, above all other noises, everywhere.

Adequate means that a signal shall convey a definite, unmistakable warning—not a toot, nor a tune, nor a scale, nor any sound, feeble or musical—but a note that means danger, that expresses alarm, that says: "Auto coming! Look out!! Now!!!"

Adequate means a signal that is always independent of any other power, always ready, always handy.

ADEQUATE MEANS THE KLAXON WARNING SIGNAL; AND TODAY THE LAW, THE PUBLIC, THE MOTORIST KNOW AND ADMIT THIS FACT.



KLAXONET

LOVELL-McCONNELL MFG. CO.
NEWARK, N. J.

KLAXON

"The Public Safety Signal"



KLAXON



THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

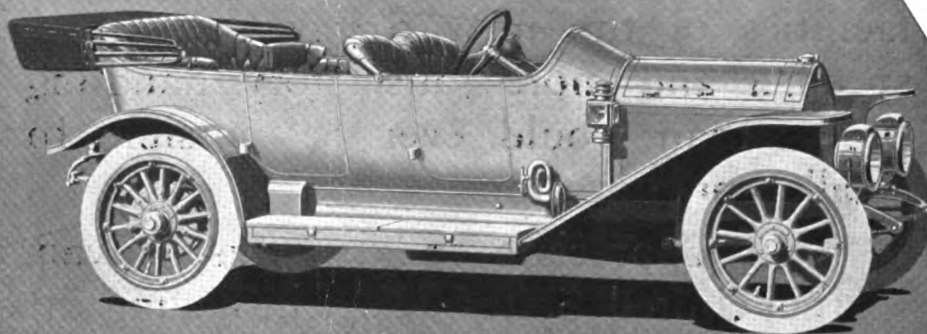
THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

Licensed under Selden patent.

THE MOTOR WORLD

A trade paper giving the
World's Motor News

Ten cents a copy—
Two dollars a year



Model 11-K
Full Torpedo
with Top \$3125

"Stoddard-Dayton"

NONE can go further—none faster—
none ride with greater ease and com-
fort—none have ever given better service.

The Dayton Motor Car Co
Dayton, Ohio

**Here are the reasons why the
dealers of this country are lining
up solidly with the**

United States Tire Company

They realize that the sales policy and the facilities of the new organization mean speedier and more satisfactory handling of orders than would ever be possible for a smaller organization.

They appreciate the immense advantage to the United States dealer in having the established demand for these famous brands focused upon his store. This, coupled with the powerful backing up he will receive from our countrywide advertising campaign, will make United States tires by long odds the easiest and fastest selling brand on the market.

But more than all this is the fact that they already know the new company thoroughly — know its fair and square policies and know every one of the men who will direct them.

The Automobile Trade Know These Men

Scarcely a dealer in the country but is personally acquainted with one or more of these men who will direct the selling policies of the UNITED STATES TIRE COMPANY.

J. M. GILBERT, General Manager

(Formerly General Manager of the Continental Caoutchouc Company)

J. D. ANDERSON, Sales Manager

(Formerly President and Sales Manager of the Hartford Rubber Works Company)

O. S. TWEEDY, Eastern District Manager

(Formerly Sales Manager of the Continental Caoutchouc Company)

A. I. PHILP, Central District Manager

(Formerly Vice-President and Sales Manager of Morgan & Wright)

J. C. WESTON, Western District Manager

(Formerly Secretary of Morgan & Wright)

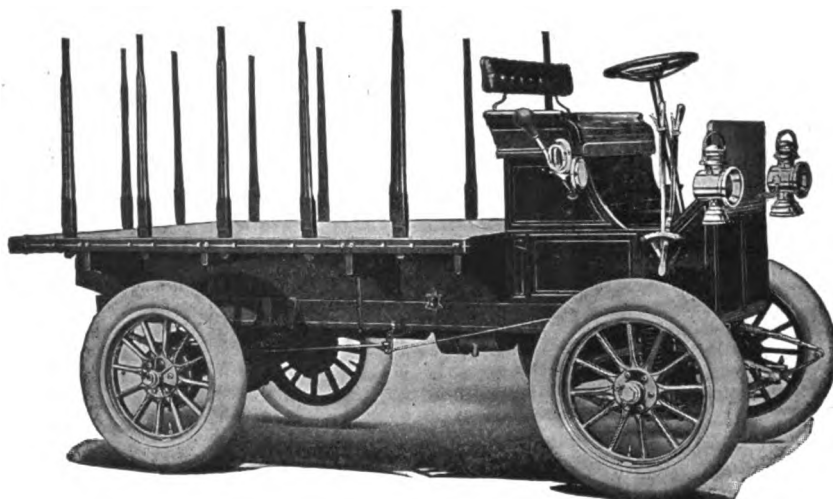
These are the men with whom you will do business.

These are the men who guarantee to you the fairest and squarest treatment it is possible for a concern to give its customers.

UNITED STATES TIRE COMPANY

58th Street and Broadway, New York, N. Y.

Franklin Commercial Cars



"The uninterrupted service which our pneumatic-tired, air-cooled Franklin truck has given us has demonstrated beyond any question of doubt that pneumatic tires contribute largely to the successful service of a truck.

"The tires, at this writing, have run 6450 miles and are in extremely fine condition. We have every reason to believe that they will give us 4000 more miles of service." —D. Deavenport & Co., Rochester, N. Y.

Pneumatic tires on the Franklin truck demonstrate their superior efficiency and economy under every possible condition of service.

Because it can maintain a higher average speed with absolute safety the Franklin truck can move more goods in a day than any solid-tired truck of the same and in most instances of even fifty per cent greater capacity.

Pneumatic tires absorb vibration and greatly reduce necessity for repairs by eliminating the destructive action of road shocks on the mechanism of the truck.

Wherever the pneumatic-tired Franklin truck is used it keeps more steadily at work and shows a lower cost for operation and maintenance than any other type.

An average of 2740 miles without a puncture, with total service in excess of 10,000 miles in a number of cases, has been obtained from pneumatic tires used on Franklin trucks. Total tire service in every case is greater than that obtained from the use of solid tires on other makes of truck.

Franklin air cooling is the only satisfactory cooling system for commercial motor cars. It is the simplest; it is the most dependable because it has absolutely no parts to get out of order. It is the most efficient because it cools properly under every possible condition of running.

Write for Franklin commercial car catalogue. The Franklin line includes stake platform and express body trucks, taxicabs, passenger 'buses, police patrols, light delivery wagons and ambulances.

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

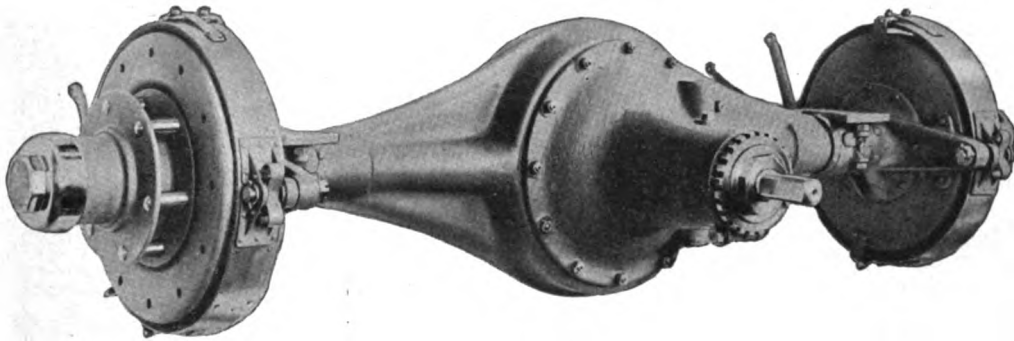


The Mayo—the radiator thoroughbred

¶ A car, like a gentleman, is easily recognized.

¶ Mayo Radiators lend just that distinguishing touch to a car that is often the deciding factor in its purchase.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT



Full Floating Adjustable Type

¶ Driving member is inserted as a unit and may be adjusted in place.

¶ Housing is stamped from sheet steel. This construction provides strength at the points where the strain is the greatest.

¶ Internal and external brakes are 14 in. diameter.

¶ Axle Shafts are made from alloy steel "Heat Treated" so as to give the highest physical properties possible.

¶ Pinion and driving shaft are integral. Forged from alloy steel "Heat Treated." Teeth are planed.

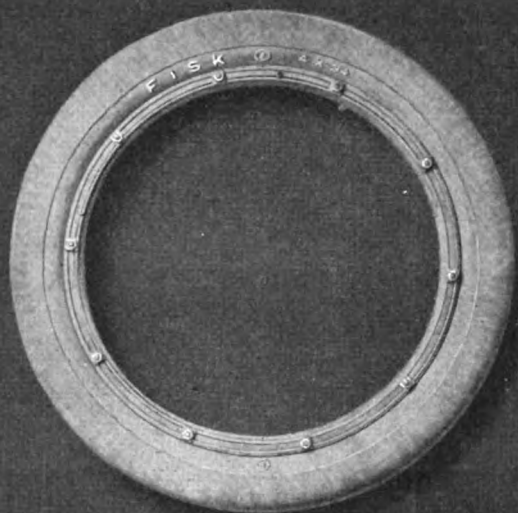
¶ Can be equipped with annular or roller type bearings.

¶ The design, material and workmanship on this axle are of the highest quality.

Write Us Regarding Your Requirements

THE AMERICAN BALL BEARING CO.

L. S. & M. S. Ry. and Edgewater Park
CLEVELAND, OHIO



Service and Satisfaction

are assured if your
Tire Equipment is

FI SK

The name that stands for Quality,
Mileage and a Fair Deal for
each and every customer

Investigate and Compare Before You Buy

Tires for Every Rim—Bolted-On, Clincher,
Q. D. Clincher, Fisk-Dunlop

The Fisk Rubber Co.

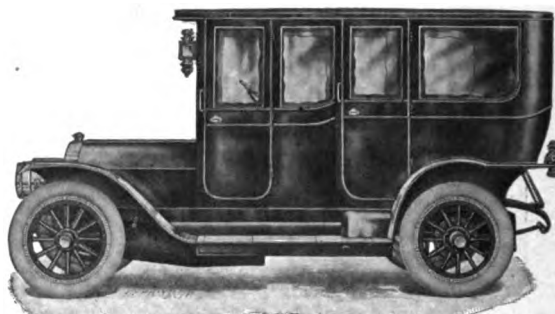
Dept. 23 Chicopee Falls, Mass.

Direct Factory Service in 23 Cities



The Limousine is King in Winter

It is comfort, convenience and utility worked
out in their highest motor development.



1911 Knox Model "R" 40 H.P., 7 Passenger, Fore-Door
Limousine. Price, fully equipped, \$4400.

In this age of startling progress what a
great convenience it would be if you could
step into a richly furnished den in your
home and, closing the door, be rapidly
whisked to your destination.

It would be a service of unmeasured
value.

Yet the Limousine car standing at your
driveway door answers the same purpose. It
is a miniature room with complete furnish-
ings of a high grade, designed solely for
comfort. Writing materials, mirror and
toilet accessories, together with the smoker's
electric cigar lighter and ash tray are all
there. And the long glass vase for cut
flowers gives the final pleasing touch to the
whole interior.

The new KNOX FORE-DOOR LIM-
OUSINE expresses this detachable room idea
to the utmost. It is built with the sole idea
of restful comfort and untiring service. Com-
fort not only for the passengers but also for
the driver. And it has a lasting quality that
stays new.

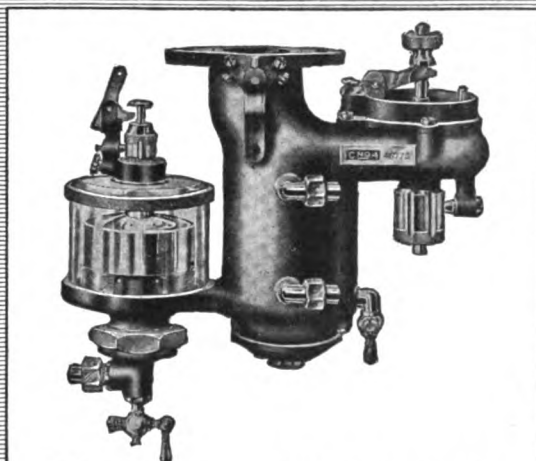
Our new catalog will tell you more.

Knox Automobile Company

Springfield Massachusetts

Members A. L. A. M.

STROMBERG CARBURETORS



*Nearly every high-class six
cylinder car made in America
is equipped with this type of
carburetor.*

Send for Booklet No. 1.

"BEST BECAUSE THEY GIVE THE BEST RESULTS"

STROMBERG MOTOR DEVICES COMPANY

Main Office and Factory, 64-66-68 East 25th Street, Chicago. New York Branch, Automobile Building, 1926 Broadway, at 64th St. Boston Branch, Motor Mart, 91 Church St. Detroit Branch, 1211 Woodward Ave. Northwestern Branch, 1514 Hennepin Ave., Minneapolis.

Portland Branch, Chanslor & Lyon Motor Supply Co.

LIST OF DISTRIBUTORS—Chanslor & Lyon Motor Supply Co., Los Angeles, San Francisco and Fresno, Cal.; Seattle and Spokane, Wash.; Portland, Ore. Canada Cycle and Motor Co., Toronto, Montreal, Winnipeg, Hamilton, Calgary, Vancouver. Post & Lester, Boston, Worcester and Springfield, Mass.; Hartford, Bridgeport and New Haven, Conn. Auto Equipment Co., Philadelphia, Pa. Way-Mitchell-Rigdon Co., Cleveland, O. James G. Barclay, Buffalo, N. Y. Prince-Wells Co., Louisville, Ky. Von Ham-Yung Co., Ltd., Honolulu, T. H. West Coast Supply Co., Portland, Ore. Kansas City Auto Supply Co., Kansas City, Mo. Phoenix Auto Supply Co., St. Louis, Mo. Auto Equipment Co., Denver, Col. Coughlin & Davis, Cincinnati, O. Northland Motor Car Co., Minneapolis and St. Paul, Minn. Rambler Garage Co. of Milwaukee, Milwaukee, Wis. Pittsburg Auto Equipment Co., Pittsburg, Pa. Mohler & DeGress, Mexico City, Mex. Auto Supply Co., Baltimore, Md. Sharman Auto Co., Salt Lake City, Utah. Fisk Co. of Texas, San Antonio, Tex. Omaha Rubber Co., Omaha, Neb. Syracuse Rubber Co., Syracuse, N. Y. Kelley Hardware Co., Duluth, Minn.

BOSTON

—discriminating—conservative—nowhere are qualities more strictly scrutinized—

GIVES A MARKED PREFERENCE TO

Diamond**TIRES**

Larger in number and value of cars than any prior show, here or elsewhere, Boston's greatest automobile exposition fully confirms the national choice in tire equipment as revealed in all other principal cities.

NOTE

In each of the following 1911 automobile shows—all the largest of the year, DIAMOND Tires equipped the greatest number of cars.

New York Garden
New York Palace
Boston
Chicago
Philadelphia
Buffalo
Cleveland
Cincinnati
Oakland
Los Angeles
Portland
Kansas City
Minneapolis

TOTALS

682 cars on
DIAMOND Tires.

429½ cars on
highest competing
make of tires.

Including all sections of this show the figures stand:

93 Cars are equipped with DIAMOND Tires

71 " " " " next highest make

61 " " " " third " "

43 " " " " fourth " "

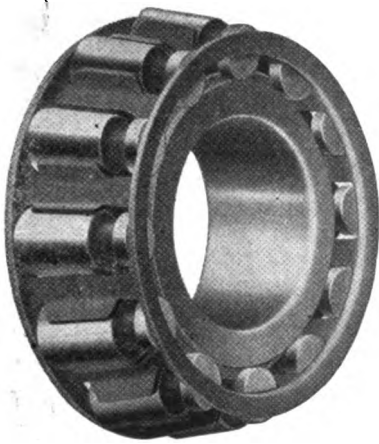
17 other makes of tires divide remaining cars

Because—The time has come when the automobile owner requires not tires, merely, but large tire mileage.

Because—Imaginary benefits, though often cleverly presented, often most plausible to the uninformed—cannot for long compete—cannot stand against tangible values—staunch endurance!—MILEAGE!!

THE DIAMOND RUBBER COMPANY

Akron, Ohio



Once Timken Always Timken

- ❑ If by far the large majority of Automobile Builders of the Country agree upon any point of automobile design, there is extreme probability that they are right about it—and those who do not agree are wrong.
- ❑ The supremacy of TIMKEN ROLLER BEARINGS is admitted by most of the Automobile Builders in America—and those who do not use TIMKENS only say that what they do use are “just as good.”
- ❑ When over **80 per cent.** of high grade manufacturers of automobiles have discarded other bearings for the TIMKEN—and when no automobile builder has ever discarded TIMKEN ROLLER BEARINGS, due to unsatisfactory service, there must be good reason for this.

THE TIMKEN ROLLER BEARING CO.

CANTON, OHIO, U. S. A.

No Nuts

No Bolts

No Clamps

No Junk

No Bunk

Adopted as standard equipment on all Benz cars.

Owners of Peerless, Packard, Pierce-Arrow, Lozier, Chalmers, Cadillac, Benz, Pope-Hartford, Winton and many other makes of cars are ordering us to equip their individual cars with our Demountable Rims, and in a great many instances are specifying them when ordering new cars.

We manufacture our own device and guaran-



tee it for life not to be affected by any weather conditions.

Nothing to lose in the sand, dirt or snow. Just mechanically comes off and is mechanically forced on again.

Designed originally as a demountable rim to do away with tire trouble, and for use especially on pleasure cars, it has since developed to the safest, simplest and quickest demountable ever produced.

I consider the Booth perfect, and use them exclusively on all my cars. —BARNEY OLDFIELD.

It's a Booth! That's all you need know about a demountable rim. All engineers or any convention of engineers invited to prove that our rim is not mechanically perfect.



The Booth Demountable Rim Co.

CLEVELAND, OHIO

THE ATWATER KENT SYSTEM

Consider Your Ignition Problem Now!

NOT when the old ignition troubles have reasserted themselves. Not when you have begun to question whether the fun of a ride is worth that secret worry as to when you and your guests will get home. Not when you begin to have haunting suspicions of spark plugs, cables, coils, interrupter, carburetor and gasoline. Not when you grudge the time it will take you to make the change, and cling to the old unreliable system until you are thoroughly sick of the whole matter.

If a change is to be made, make it now, before the car is put into service this spring. If you are going to look into the Unisparker, do it now. It will take no longer now than later, and you will have knowledge, not guesswork, for guidance.

By all means, look up some one who has used the Unisparker or the Spark Generator and ask him.

The Atwater Kent system does away with troublesome vibrator coils and commutator with sliding contacts. There is only one contact point and three moving parts in the entire system. A set of dry cells will run your car 2000 to 3000 miles.

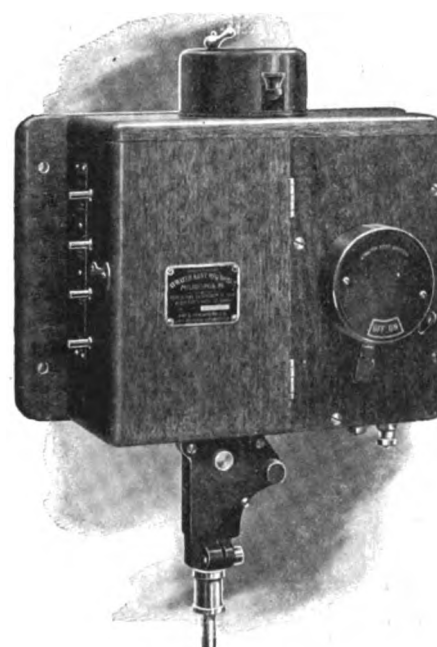
Yes we are always glad to answer questions.

Ask our inquiry department about the Unisparker as applied to your car.



Type "B"

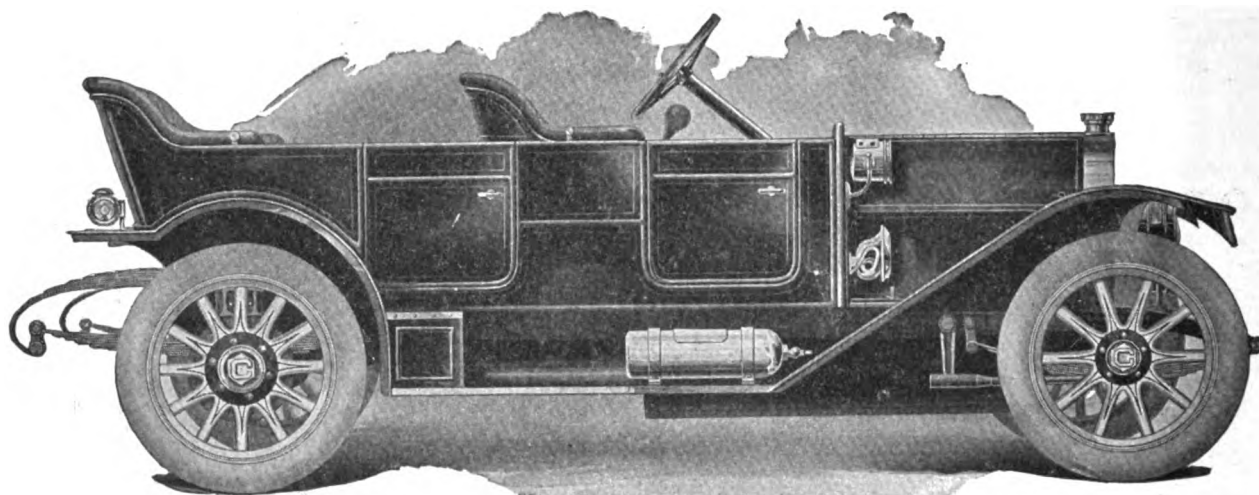
UNISPARKER



Spark Generator

ATWATER KENT MFG. WORKS

33 NORTH SIXTH ST., PHILADELPHIA, PA.



Model H 5 Passenger Fore Door Touring Car—\$1750

COLBY

Built to Compete with \$3000 Cars

We wish to extend our thanks to the experts and others who have been so pronounced in proclaiming the Colby "40" the best motor car ever put on the market selling for less than \$2500.

It easily develops 5 to 50 miles an hour without overworking the motor, or causing any unpleasant vibration of the car.

The Colby is designed for comfort, as well as appearance, having the grace and beauty only found in high priced cars.

In our construction, we have used only the very best workmanship and material throughout. A glance at our specifications will prove it. Compare them with cars selling for three thousand and more.

We would be pleased to have the most skeptical call at our exhibit and be convinced.

SPECIFICATIONS

Body: Standard touring straight line. Seating capacity, five. Fore-doors. Motor: Four Cylinder—H. P., 35-40. Bore, 4 $\frac{1}{4}$; stroke, 5 $\frac{1}{4}$. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four. Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case. Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

Ignition: Jump spark dual system. Carburation: Carburetor—special fuel feed—gravity. Clutch: Type—multiple disc. Friction surfaces—steel to steel. Gearset: Selective—located amidship. Three speeds forward. Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating. Bearings: Crankshaft—three large. Plain. Camshaft—three, plain. Clutch

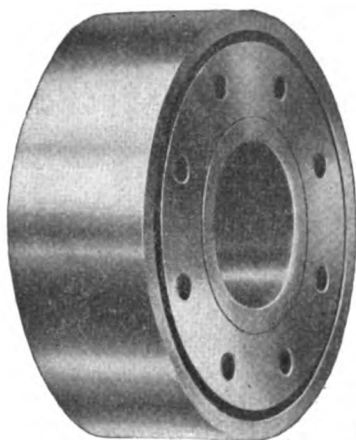
—spindle, plain. Clutch, thrust, ball. Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball. Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white bronze. Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36 x 4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type.

Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel. Demountable Rims: Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra. Control: Hand levers on steering wheel and foot accelerator. Price: \$1,750, L. o. b. Mason City.

COLBY MOTOR CAR COMPANY, Mason City, Iowa

New York Representative—EMPIRE CITY AUTOMOBILE CO., 1800 Broadway.

Hyatt Roller Bearings



THIRTY-TWO THOUSAND Hyatt Roller Bearings of the High Duty Type have been furnished within the past two years to one transmission manufacturer; for distribution among prominent Motor Car Builders.

Special conditions offered an exceptional opportunity to determine the actual number of replacements. Up to the present time there have been less than one-tenth of one per cent, part of which are due to causes other than mechanical defects in the bearings themselves.

High efficiency, first cost, dependability,—each and all of which make bearing value,—are not claimed as exclusive Hyatt features. But in practical value—the proper proportioning of all these factors and in ability to enable the Motor Car Builder to meet present conditions—the Hyatt Roller Bearing is claimed superior.

An opportunity is solicited of substantiating these claims.

Hyatt Roller Bearing Co.

Detroit, Michigan

Parts Makers to the Best and

The manufacturers whom we represent as selling agents specialize in one direction—and that is honest quality.

Collectively and individually they have always placed quality above every other consideration.

The result is that the products of their plants are used by builders of the best and best known cars in the country; in cars small and large; of great cost and moderate cost.

AMERICAN DISTRIBUTING COMPANY

SALES AGENTS FOR

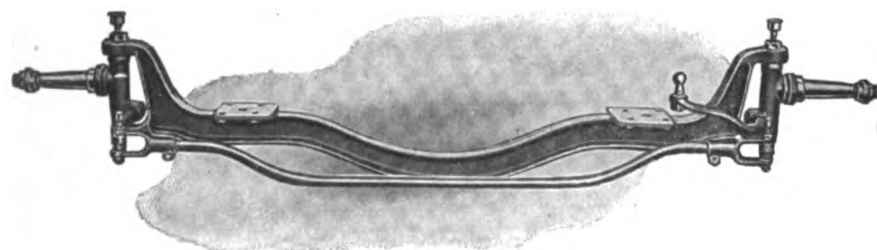
THE LEWIS SPRING & AXLE CO.
Jackson, Mich.

AMERICAN GEAR & MFG. CO.
Jackson, Mich.

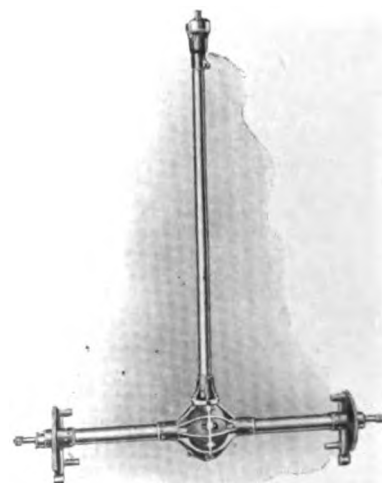
FROST GEAR & MACHINE CO.
Jackson, Mich.



No. 8 Rear Axle—One of several Lewis models, each beyond comparison for quality.



No. 4 Front Axle—Four models, covering all requirements.



American Gear & Mfg. Co.'s Rear Axle
for light cars.

Best Known Cars in America

The five companies—each known in the industry by the good name of the parts it makes—are:

Lewis Spring & Axle Company
 American Gear & Manufacturing Company
 Frost Gear & Machine Company
 Sparks-Withington Company
 Hayes Wheel Company

They make: Axles, front and rear; side lever control sets; drop forgings; transmissions and differentials complete; steering columns; wheels; pressed steel and aluminum fans; brake drums, hub caps, ball cups, etc.

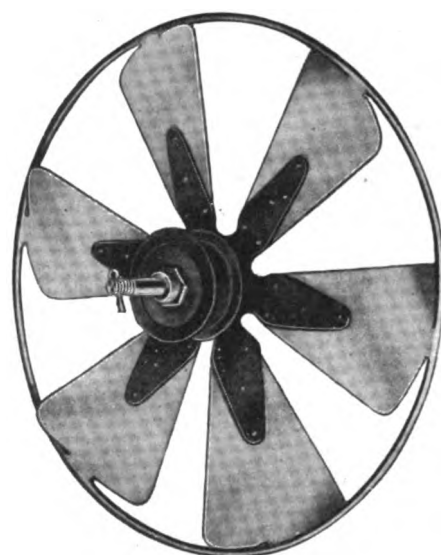
For these, the American Distributing Company is the exclusive selling agent.

030 S. Park St., Jackson, Michigan

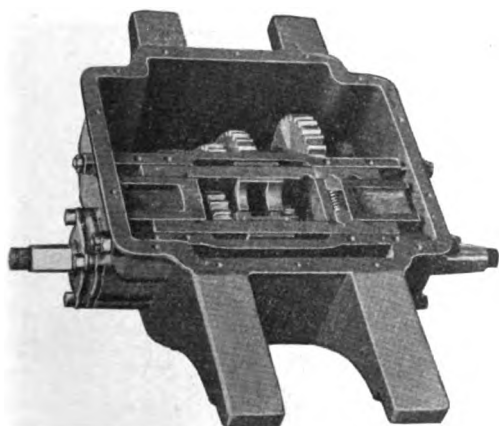
SALES AGENTS FOR

HAYES WHEEL CO.
 Jackson, Mich.

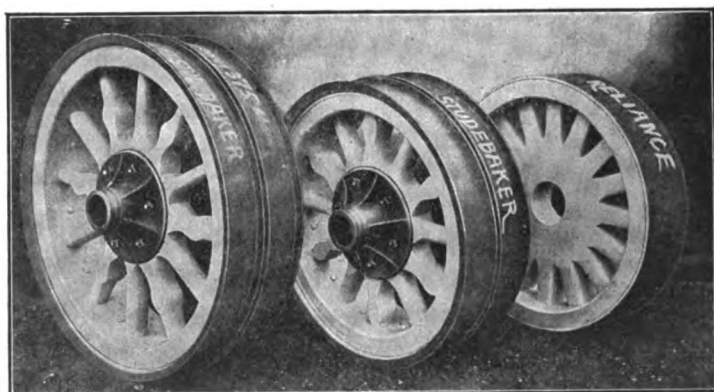
SPARKS-WITHINGTON CO.
 Jackson, Mich.




One of the Sparks-Withington numerous products in pressed metal.



New Frost Plain Bearing Sliding Gear, Selective Type Transmission. Quadrant in shifter slide cover removed. Three speeds and reverse.



Several Types of Hayes Wheels for heavy trucks. All types for pleasure cars also produced.



ELECTRIC LIGHTS FOR YOUR CAR

**The Modern, Up-to-the-Minute
Method of Automobile Lighting**

GRAY & DAVIS Dynamo System

It is only a question of time when every automobile will be equipped with electric lights—eminent engineers, manufacturers, dealers, owners agree on this. Why not be a little ahead of the time? Get this system for your car—it is the greatest convenience ever offered the motoring public.

If You're a Manufacturer

Equip your cars with the Gray & Davis Dynamo. Makes your automobile a COMPLETE car—a modern car.

Car buyers are awake to the advantages of this remarkable dynamo. Why not write us for full particulars. Let us explain the simplicity of operation, the real advantages of this complete electric plant. Better write to-day.

If You're a Car Owner

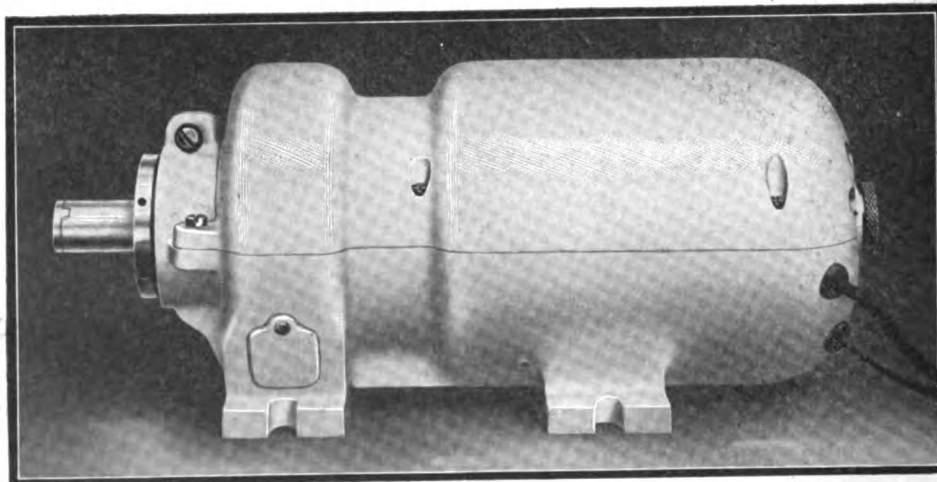
Get this Dynamo System for your car. Lights your lamps with electricity. Charges your batteries. Possesses features found in no other system.

Constant Speed. Governor takes care of excessive speed. Compound Wound when lighting lamps. Shunt Wound when charging batteries.

Absolutely reliable—unusually simple. Write us to-day for interesting catalog.

GRAY & DAVIS Manufacturers of
Automobile Lamps **Amesbury, Mass.**

Write us today for very interesting booklet. Fully describes the Dynamo System and the famous Gray & Davis line of lamps.



"Less Haste—More Speed"

Proven True of Inter-State Policy

A dependable watch is not hurried in the making.

It takes time to cut out a great diamond.

If a motor car is shot through the factory, its parts hurriedly turned out and assembled into what acts like a real automobile for only a few months, the buyer of that car naturally regrets his choice. He is liable to look upon all pleasure cars as luxuries.

It was a mighty expensive luxury to some hundreds of thousands who went motor-mad and now repent their ownership of an "assembled" or a "we-turn-out-so-many-hundred-a-day" cars.

Too many cars were "turned out" into the world to fill that great unhealthy demand. The enemy of the automobile today is the man who blindly plucked the "citrus car," the unripe variety of automobile.

The slogan "Less haste, more speed" nailed to every wall of our factory for three years, has held our output down to where it belongs. The first cars we built were weeks in the factory. We have been slow and orders-behind ever since. But we won't hurry so fast that the tiniest bit of construction is slighted.

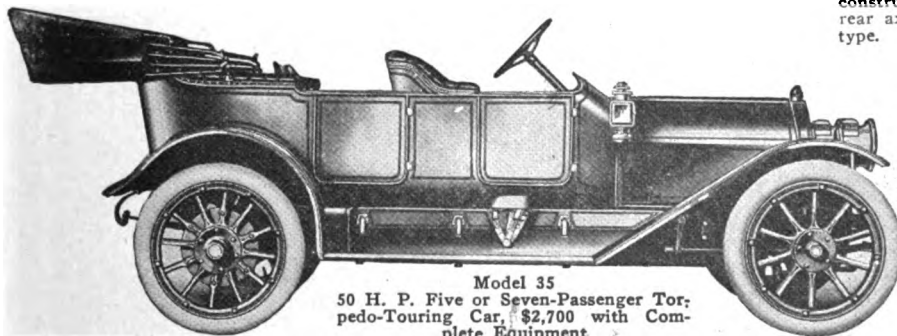
Therefore, "more speed" towards nation-wide popularity. Now we have a larger factory and we build more cars—but no faster than ever.

And our "high quality-sane-price" idea is simply meeting magnificent applause. We have demonstrated that it can be done—the building of a perfect and long-life car at a reasonable cost.

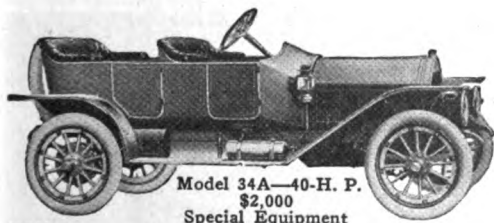
New catalog tells more and is free to all interested.

Use Reminder below.

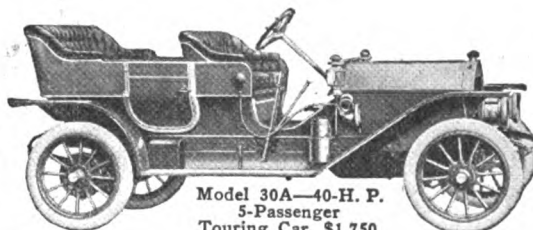
Inter-State



Model 35
50 H. P. Five or Seven-Passenger Tor-
pedo-Touring Car, \$2,700 with Com-
plete Equipment



Model 34A—40-H. P.
\$2,000
Special Equipment



Model 30A—40-H. P.
5-Passenger
Touring Car, \$1,750

SPECIFICATIONS

Inter-State "40" 1911 Models

The motor for our 6 "40" models is rated at 40 h. p. Average speed of 1,500 revolutions a minute. Bore, 4½ inches. Stroke, 5 inches. L-head type. Valves all on one side of large diameter, nickel steel heads, carefully ground stems. Push rods with rollers of large diameter, providing rolling contact on cam shaft. Valve adjusting screws with fibre cushion heads, insuring silent valve action. Crankshaft special carbon steel, drop forged and double heat treated. Mounted in three bearings of large dimensions lined with die cast white brass of best quality and lubricated by force feed gear pump. Constant level splash oiling system, insuring accurate oiling at all times. Oil reservoir two gallons capacity. Sight feed in easily discernible position on dash, showing amount of oil flowing to bearings at all times.

Clutch and transmission housed in integral oil tight case, separated by retaining wall allowing use of special oils for each unit. Clutch of improved cork insert design, operating in oil. Eight cork insert discs enclosed between nine steel discs, providing contact of cork on steel. Throwout fork and collar provided with ball thrust, assuring long life. This construction provides a wonderfully smooth-acting clutch of long wearing qualities and gradual, easy, positive engagement. Gearset of selective type with three forward speeds and one reverse. Extra heavy pitch gears of chrome-vanadium steel, running in oil. All clutch and transmission bearings are imported annular ball type.

50 Horsepower Torpedo-Touring Car

Five or Seven-Passenger, \$2,700; Full Equipment.

This new and larger model incorporates the best features of the Inter-State "40." With a number of advanced points of construction, never before offered in any but the highest-priced machines. T-head type motor with separate inlet and exhaust cam-shafts. Suspended at three points, precluding any possibility of frame stresses being transmitted to the motor. Crankshaft supported by three bearings of especially liberal dimensions. Conservative rating of 50 h. p. at 1,500 revolutions per minute. Valves 2¼ inches in diameter, nickel steel heads with carefully and accurately ground stems. Separable valve guides. Extra large frictionless, roller push rods with fibre-cushion adjusting screws. All rollers and cam-shafts case-hardened and ground to exact dimensions. Camshaft and pumpshaft bearings eccentric, allowing very accurate adjustment of reduction gears. This feature with double gear on crank-shaft assures noiseless operation.

Special lubricating system with improved distributing pump assures positive delivery to the three main bearings. Oil overflow from bearings is retained in pockets in the false bottom of the oil-pan, allowing splash spoons on connecting rods to dip slightly. Sight feed located on dash, readily discernible showing amount of oil supplied to bearings at all times.

Mechanically operated cooling system actuated by centrifugal pump. Extra large water manifolds and piping. Radiator, cellular construction and of ample capacity to insure cooling of motor at all times. Two complete ignition systems comprising dry batteries and four-unit coil and a specially imported high-tension magneto. Each system is provided with separate set of spark plugs.

Front axle of double-forged I-beam section, carefully heat-treated. Steering knuckle provided with ball thrust bearings to facilitate turning and mounted on extra large hardened bolts.

Rear axle specially designed for Inter-State cars. Full floating type, completely provided with adjustments for accurately determining position of driving gears. Pinion shaft, pinion gear and differential mounted on single steel casting, insuring permanent alignment. Special torsion tube construction eliminates the use of torsion bars or distance rods. All wheel, rear axle and driving-shaft bearings of extra large imported annular ball type.

Brakes located on rear axle of internal expanding design. Service or foot actuated brake operating on drum 16 inches in diameter. Emergency brake operating on 12-inch drum. All brake bands with 2¼-inch face, fully protected from dust and dirt.

Pressed steel frame narrowed in front and raised in the rear to allow full action of rear springs. Front springs semi-elliptic type, 40 inches long. Rear springs ¾ elliptic, 48 inches long. All springs 2¼ inches wide, of special vanadium steel. All spring bolts provided with grease cups.

Tires, 36 by 4½ inches with demountable rims. Wheel-base, 124 inches. Tread, 56 inches. Full equipment.

Inter-State Automobile Co.
MUNCIE, IND.

A Reminder

Inter-State Automobile Co.
Muncie, Indiana

M. W.-32

Send me your Free Catalog.

Name

Address

INSURANCE

The car manufacturer who uses Stewart Speedometers as standard equipment insures himself and patrons against speedometer troubles during the whole life of the car.

A big car manufacturer writes:

In consideration of the wonderful service that Stewart Speedometers have given on our cars we have decided to again use Stewart Speedometers as standard equipment on our 1912 cars.

Built Right — Priced Right

Always on the Job

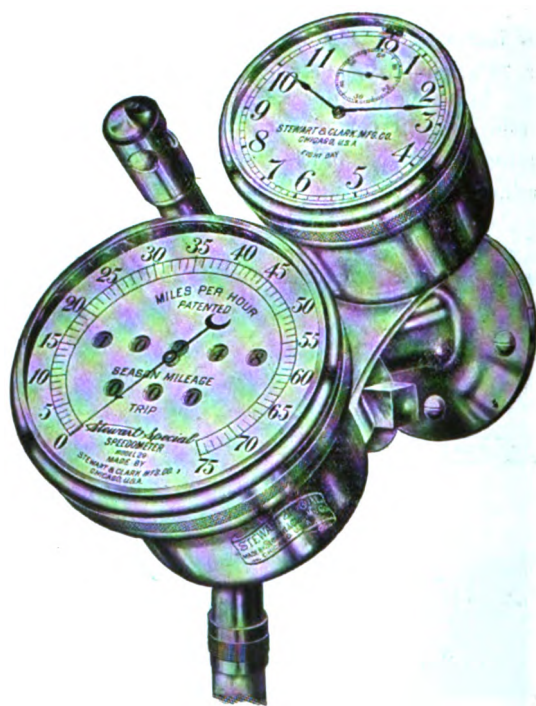
USE A STEWART

Stewart & Clark Manufacturing Company

1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
New York: 1878 Broadway
Chicago: 1312 Michigan Avenue

San Francisco: 307 Golden Gate Avenue
Los Angeles: 1212 South Main Street
Philadelphia: 608-10 North Broad Street



Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years

SCHAFER BALL BEARINGS

**FEAR NO COMPARISON
NO SUBSTITUTE IS EVER "JUST AS GOOD"**



**MOST OF THE BIG EVENTS IN 1910 WERE
WON WITH SCHAFER EQUIPPED CARS**

**THE PIONEERS TO EMPLOY
92% OF BALLS IN THE RACE WAY**

CATALOGUE ON REQUEST

**BARTHEL, DALY & MILLER
SOLE IMPORTERS**

42 BROADWAY NEW YORK CITY

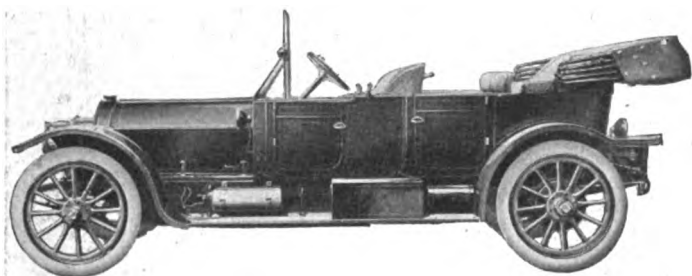
**Our new combination radial and thrust
bearing now ready — send for details**

KISSELKAR

Every Inch a Car

KisselKar quality needs no explanation—the quality is there, and known to be there wherever automobiles are known. Everything essential or contributory to the ability, comfort, refinement and distinction is embraced in the KisselKar.

Two products of the KisselKar factories are especially conspicuous this season—the 60 H. P. “Six” at \$2500 (fore-door \$100 extra) and the 3 Ton KisselKar Truck. The “Six” is accepted both by dealers and private buyers as the



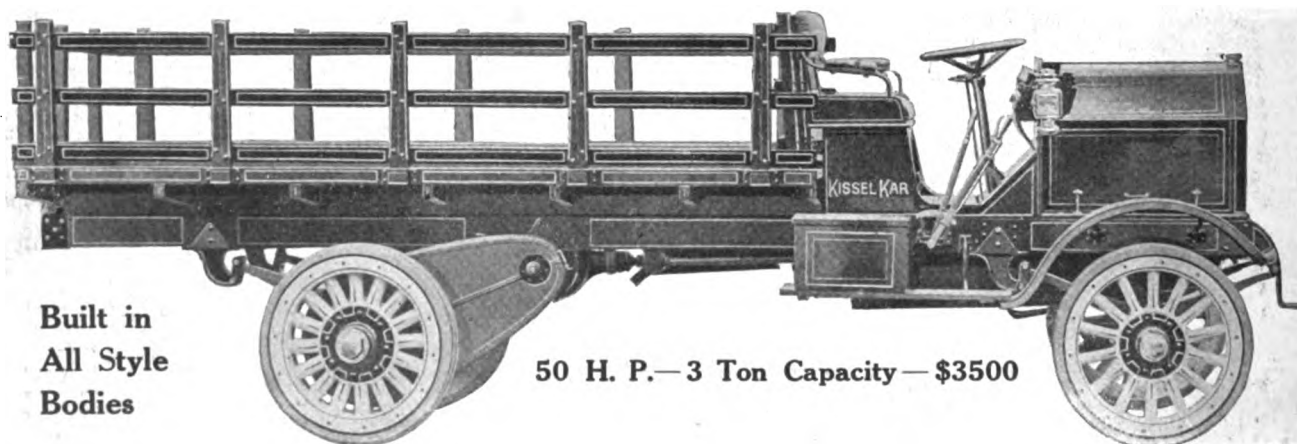
The “Six” and the other pleasure car models—30 H. P. \$1500 and 50 H. P. \$2000—have the smoothness, silence and comfort qualities which, with the rakish symmetry of design and superb appointments, distinguish them as upper-class cars.

phenomenal pleasure car value in the history of the industry, while the truck in every test has demonstrated its facility for economy, dependability and its adaptability for every demand.

The KisselKar 3 Ton Truck has the reserve horsepower and extra capacity to handle loads in excess of its rated capacity, effecting dependable, economical delivery for either long or short hauls under all road conditions.

Write for illustrated Portfolio describing entire KisselKar line. The KisselKar is on exhibition in the principal cities of the United States uniformly by the most reliable dealers, or at our own branches.

KISSEL MOTOR CAR CO., 159 Kissel Avenue, Hartford, Wis.

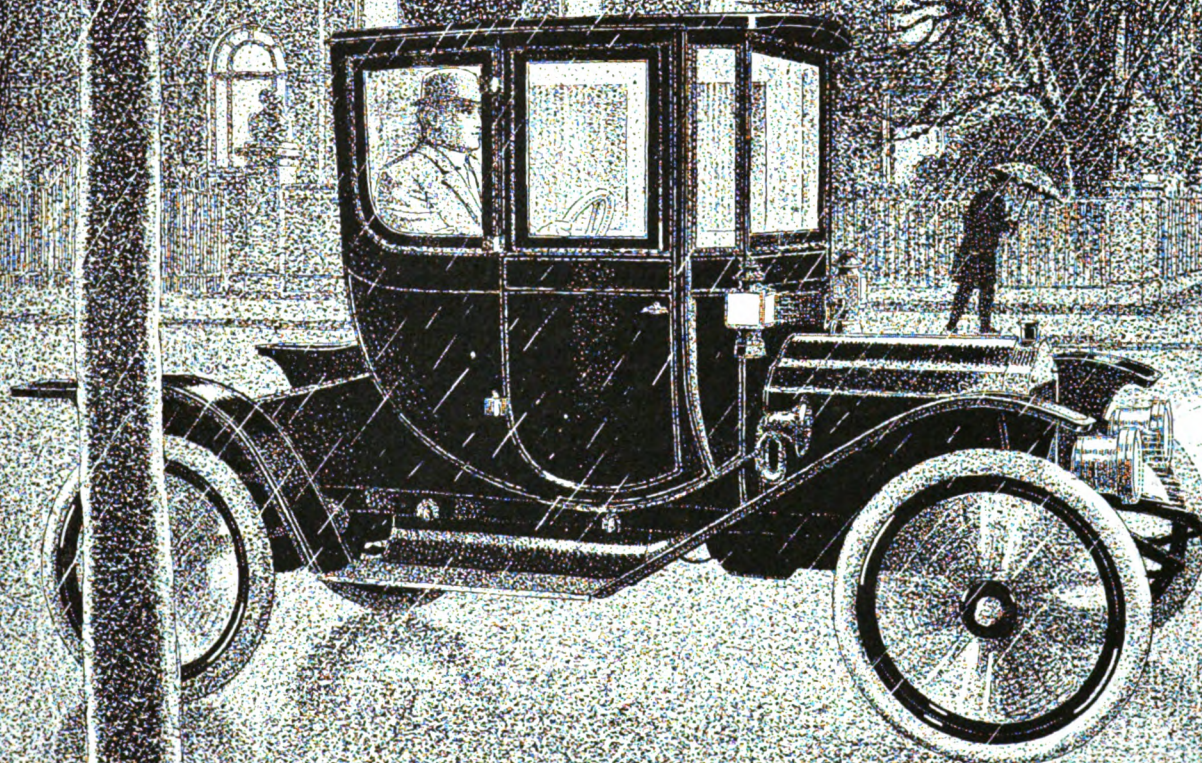


Built in
All Style
Bodies

50 H. P.—3 Ton Capacity—\$3500

FLANDERS 20 Coupe

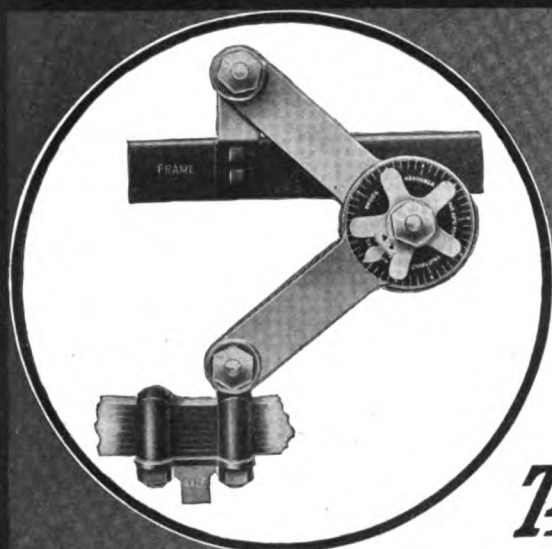
\$975



Office Comfort on Wheels for \$975

The Flanders "20" Coupe will convey you through city streets and across country roads at all hours and in all sorts of weather accompanied by every comfort of your home. This Coupe is luxuriously equipped, is finished in dark green enamel with nicked trimmings, has English Broadcloth upholstery, and is fitted with interior and exterior electric lights. Mounted on the standard Flanders "20" chassis this body is interchangeable with the Runabout Suburban and Roadster type of body for summer service.

The E-M-F Company
Automobile Manufacturers, Detroit, Mich.



The car without a jar
is equipped with the
Truffault-Hartford
SHOCK ABSORBER

Examine the springs of any car. They are all made to act upon a downward impulse—but nothing controls their reaction upward.

That's where you and the car get jolted—on the *rebound*. Now, Truffault-Hartford Shock Absorbers stop that rebound. They *ease* up the spring to its normal position, and thus avoid the continued bumping, pitching, and rolling, so discomforting to you and so damaging to your car.

Don't slow down for obstructions—equip your car with Hartfords. Your speed will be increased. The wear on tires will be lessened. Springs will not break so easily. The cost of upkeep will be diminished considerably. The life of the car will be doubled.

Twenty prominent cars now have Hartfords as part of their *regular* equipment. Whether your car is big or little you can't afford to be without them. Write today for information of special interest to you—mention make, model, and year of your car.

HARTFORD SUSPENSION COMPANY

EDWARD V. HARTFORD, President
164 Bay Street Jersey City, N. J.

New York, 212-214 West 88th Street
Chicago, 1458 Michigan Avenue
Boston, 319 Columbus Avenue
Philadelphia, 250 N. Broad Street
Newark, 289 Halsey Street

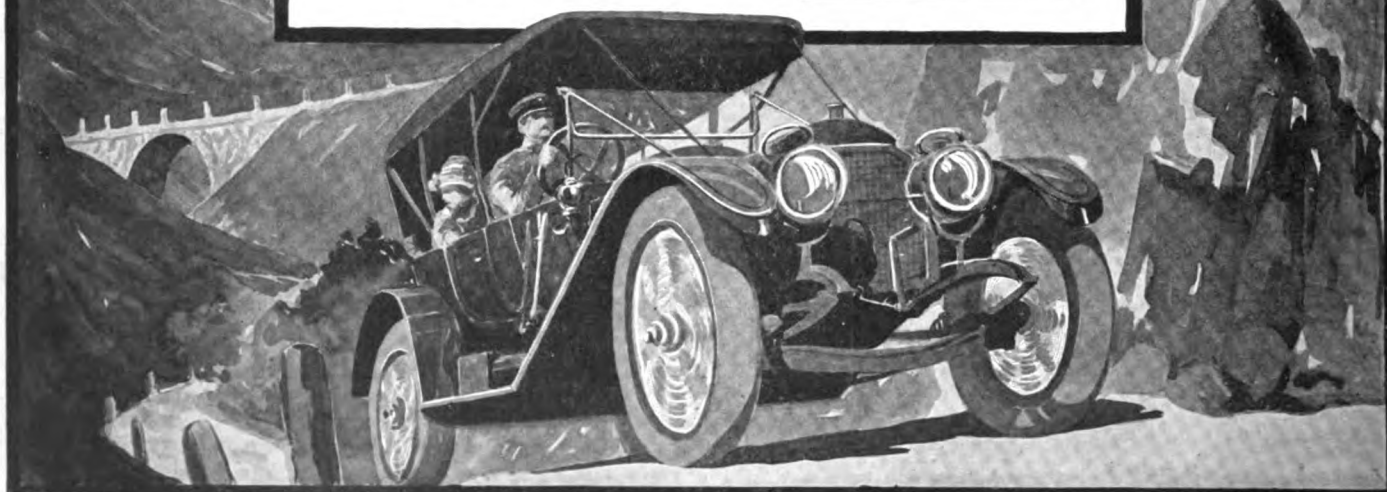
**TRUFFAULT-HARTFORD
MODELS**

Standard for cars over
2500 lbs. per set
of four . . . \$60.

Intermediate for cars from
1800 lbs. to 2500
lbs. . . . \$45.

"Junior" for smaller cars
weighing 1200 to
1800 lbs. . . . \$25.

"Juniorette" for small
cars like Ford, A.
A. Maxwell, Hup-
mobile, Brush, etc. \$15.



Why Ball Bearings Are Preferred in High Grade Cars

First. There is always liable to be some defect in alignment of shaft and mounting. This is especially true of clutch shafts, transmission cases, and axles, and it may arise from road strains after the car has left the factory. Ball bearings—some, at least—accommodate themselves to a limited distortion without cramping. The greater the freedom or play of the balls, the greater is the accommodation.

Second. Balls, unlike rollers, do not have to be kept in line with the shaft. A ball's axis of rotation frequently changes: a roller that gets askew is soon destroyed.

Third. The internal friction of a modern annular ball bearing is the lowest attained in science—and the friction of a bearing is a true index of its rate of wear.

Why HESS-BRIGHTS

Because their patented method of assembling permits greater ball freedom than would be safe if filling slots were used, and this in turn permits flexibility up to $\frac{1}{4}$ of one degree;—

Because their materials are the hardest, toughest, and most homogeneous;—

Because their workmanship is the most accurate; and

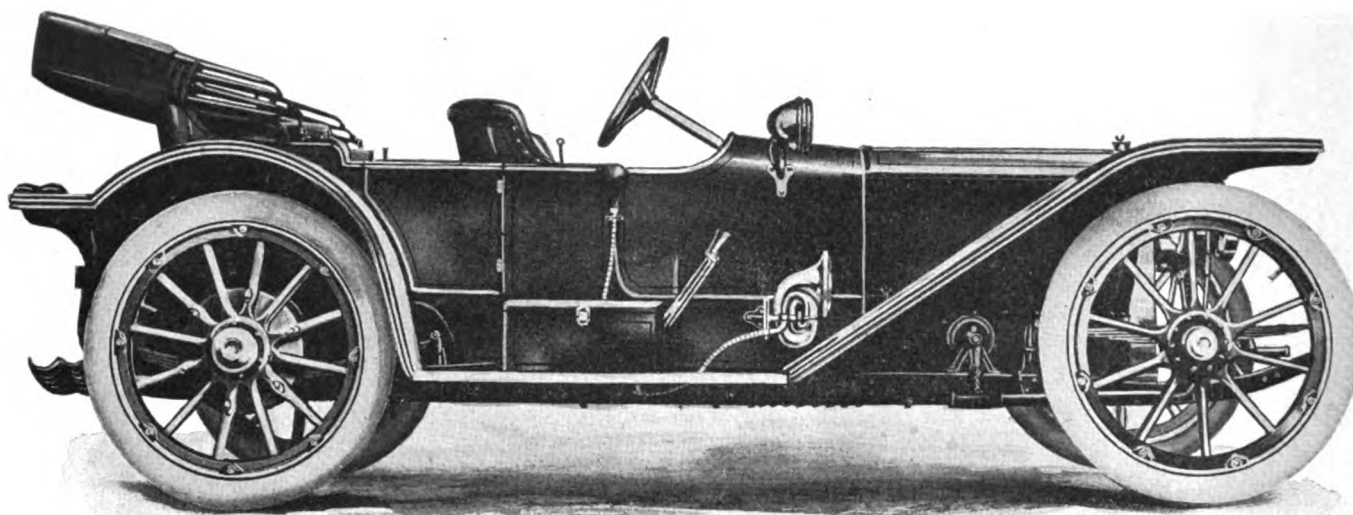
Because ordinary wear does not affect them. A Hess-Bright will with safety run looser than any other form of ball bearing.

The great predominance of HESS-BRIGHT BALL BEARINGS in nearly all high grade cars is the logical result of the features cited above.

LOCAL DISTRIBUTORS FOR RETAIL TRADE ONLY
New York, N. Y., The Hess-Bright Company, 1974 Broadway
Chicago, Ill., The Hess-Bright Company, 1800 Michigan Ave.

The more frequently used bearing sizes are also carried in stock by
THE POST & LESTER CO.
Boston, Mass., and Hartford, Conn.
CHANDLER & LYON MOTOR SUPPLY CO.
San Francisco, Los Angeles and Fresno, California; Seattle and Spokane, Washington

THE HESS-BRIGHT MANUFACTURING CO. 2109 Fairmount Avenue
PHILADELPHIA, PA.



THE AMERICAN

"A Car for the Discriminating Few"

Q. Did you ever notice how much easier a boat with a heavy keel can be handled.

Q. It is easier to hold a course and does not have a tendency to tip over.

Q. The reason for this is because its center of gravity is low.

Q. The same principle of mechanics holds good in an Automobile.

Q. If you will notice the reports of automobile accidents in the newspapers, you will find that, in nearly every case, the car has turned turtle; in other words the center of gravity of the average car is too high.

Q. With the underslung construction, however, it is possible to lower the power plant, and hence, the center of gravity.

Q. In addition to making it a safer car to drive, the underslung construction brings with it many other desirable characteristics:

Q. A straight line drive, which means less loss of power between the motor and the rear wheels.

Q. An almost total elimination of side lash on the springs or tires—a particularly desirable feature, as it decreases very

materially the wear on the tire tread, and prevents the separation of the tire fabric.

Q. There is less tendency for the car to skid.

Q. It can be driven at a higher speed with more safety than the ordinary type; corners can be turned with more safety for the reason that the springs are so nearly in line with the horizontal center of the mass of the weight that, instead of being deflected vertically, the load is applied to the side of the springs.

Q. The frame is retained in a horizontal position—the unpleasant "swinging-out" feeling at a corner is quite obviated.

Q. It allows the use of a lower body and makes possible a design which is very rakish and beautiful.

Q. With the American underslung construction the road clearance, which is oftentimes reduced in other cars, has been increased to 12½ inches, being 2 inches more than 80% of the cars built in America and abroad have.

Q. The "American" is a car built for American roads.

Q. Its high powered engine, ruggedness of design, reliable and ample road clearance, makes it an ideal car for cross-country driving, as well as for city use.

SPECIFICATIONS

TYPE OF MOTOR

Four cycle. Four cylinders cast in pairs, L type. Cylinders offset. The Speedster, Roadster Special and Traveler Special motors have inlet valves inverted directly over exhaust and operated by rocker arms.

BORE AND STROKE

Roadster, Roadster Coupe, Traveler, Traveler Coupe, Tourist and Limousine—3¼"x5½". Traveler Special, Speedster and Roadster Special 5¼"x5½".

HORSEPOWER

Roadster, Roadster Coupe, Traveler, Traveler Coupe, Tourist and Limousine—50 H. P. at 1000 revolutions. Traveler Special, Speedster and Roadster Special—60 H. P. at 1000 revolutions.

WATER PUMP

Gear driven centrifugal circulating pump.

IGNITION

Bosch high tension dual system with single unit coil, kick switch and storage battery, both systems operating through one set of spark plugs.

CARBURETOR

Floater feed auxiliary air supply type; water jacketed.

GASOLINE SUPPLY

Traveler, Traveler Special, Traveler Coupe and Roadster Coupe—22 gallons. Roadster, Roadster Special and Speedster—24 gallons. Tourist and Limousine—19 gallons. Gasoline is pressure feed, pressure being maintained by positive air pump driven from end of cam shaft.

LUBRICATION

Gear driven oil pump contained in engine case with

sight feed in toe board, oiling all bearings and cylinders. Engine contains one and one-half gallons in crank case. There are only two exposed, flexible steel oil pipes. The concealed oiling system is a new improvement of the American. Transmission and differential run in light grease.

CONTROL

Irreversible worm and sector steering gear, with 18° steering wheel bearing spark and throttle levers on a stationary sector. An accelerator pedal or foot throttle is also provided.

CLUTCH

Special woven asbestos facing, fan bladed cone type. Rubber inserts under facing to permit easy engagement.

TRANSMISSION

Selective type, four speeds forward and one reverse, with a direct drive on the fourth speed. Shafts and gears of Chrome Nickel steel. All bearings imported annular type of especially large diameter.

DRIVE

Direct shaft to differential and floating live rear axles that bear no weight.

FRONT AXLE

One piece Nickel steel, I-beam section.

WHEELS

Roadster, Roadster Coupe, Traveler, Traveler Special and Traveler Coupe—Front, 40x4, 10 spokes, 2-inch selected second growth hickory. Rear 40x4, 12 spokes, 2-inch selected second growth hickory. Speedster and Roadster Special—Front, 36x4, 10 spokes, 2-inch selected second growth hickory. Rear, 36x4½, 12 spokes, 2-inch selected second growth hickory.

Tourist and Limousine—Front, 36x4, 10 spokes, 2-inch selected hickory. Rear, 36x5, 12 spokes, 2-inch selected second growth hickory. All wheels equipped with Continental demountable rims. An option of 40-inch wheels fitted with 4-inch tires is given on Roadster Special and Speedster.

BRAKES

Double internal expanding in 16° dust-proof brake drums attached to rear wheels.

FRAME

Roadster, Roadster Special, Roadster Coupe, Speedster, Traveler, Traveler Special, Traveler Coupe—Underslung, giving low center of gravity. Pressed steel of high tensile strength oil treated. Tourist and Limousine—Oil treated, pressed steel of high tensile strength overslung frame.

SPRINGS

Roadster, Roadster Special, Speedster, Roadster Coupe, Traveler, Traveler Special, Traveler Coupe—Semi-elliptic, 40-inch front, 48-inch rear. Tourist and Limousine—Semi-elliptic, 2½" wide, 40" long in front. Rear platform type giving the equivalent of 67½" in length, 2½" wide.

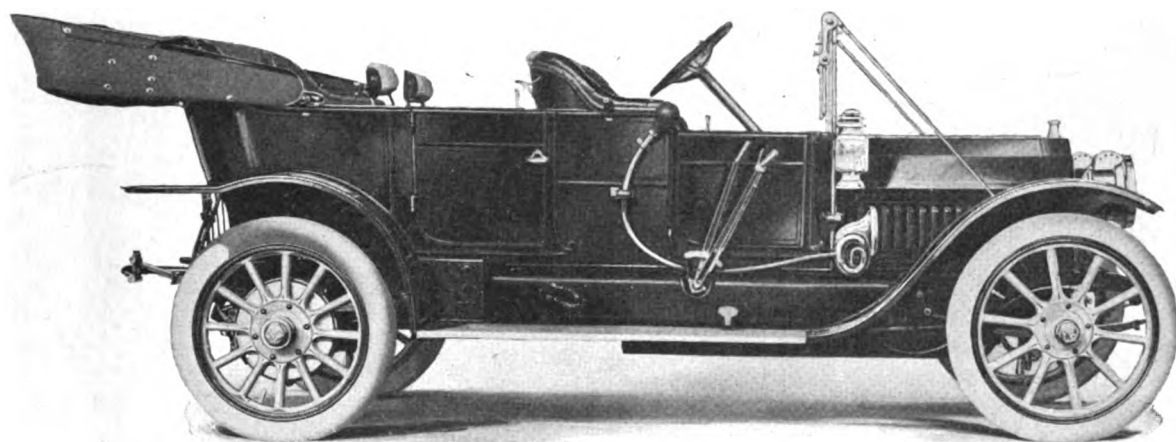
CLEARANCE

Traveler, Traveler Special and Traveler Coupe, 12½" under entire length. Speedster, Roadster Special—8" under entire length when equipped with 36" wheels. Roadster, Roadster Coupe, Tourist and Limousine—10½" under entire length.

TREAD

56 inches.

AMERICAN MOTORS CO., Dept. 15, Indianapolis, Ind.



The Distinctive Features of This Car Class It With the Most Expensive Cars Made

Note the classic lines—the smooth fore-door effect—the embodiment of strength and power in every line.

The body is distinctly a fore-door design—not simply an open body with the fore-door added. The fore-door is easily detachable, however, for summer use.

The engine is the famous Welch—T-head type, with extra long piston and large valves. The connecting rod is 12 inches long, two and a half times the stroke—and this with the long piston makes a wonderfully powerful, flexible and economical motor.

The rear axle is of the full floating type.

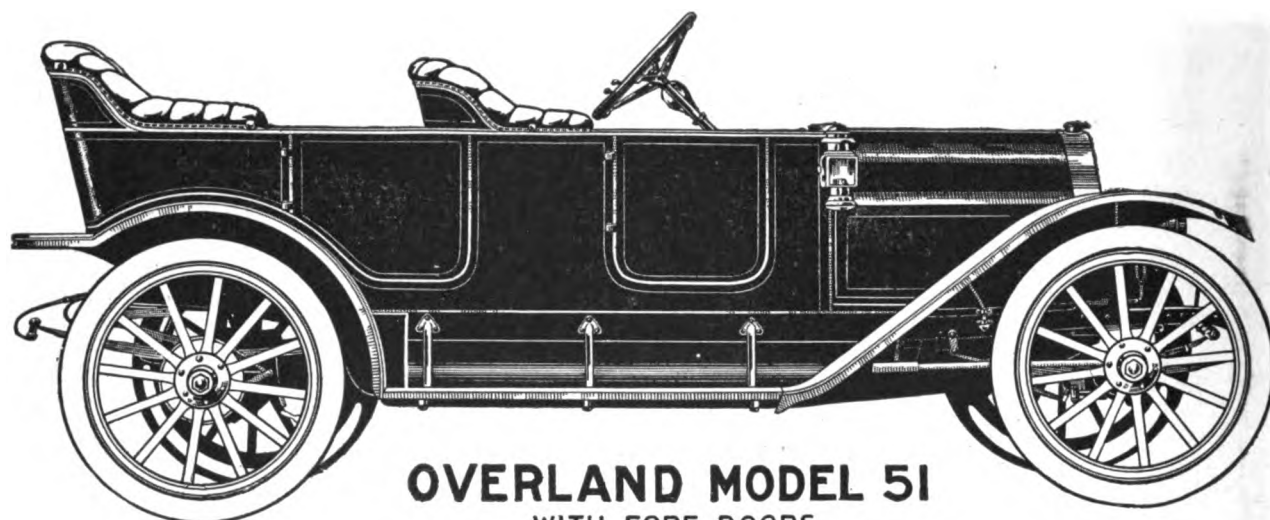
The car is equipped with shock absorbers all around.

And the price—\$3100—includes everything that you ought to have on a car from trunk rack to windshield and speedometer.

**We have a proposition of unusual attractiveness
for Responsible Dealers. May we send it to you?**

THE WELCH COMPANY OF DETROIT

Detroit, Mich.



OVERLAND MODEL 51
WITH FORE DOORS

Model 51, 30 H. P., 4 Cylinders, With or Without Fore Doors, 110-in. Wheel Base, \$1250

Judge the Car You Buy from the Efficiency of the Plant that Makes It

The more efficient a plant is—the more exacting—thorough—accurate and painstaking its methods of production are—the article it manufactures is bound to measure up in accordance. And the plant that operates on the largest and most modern scale can naturally produce its product at minimum cost. That stands to reason.

The Overland plants are the largest and most thoroughly equipped of their kind in the world. No motor car plant on earth can compete with them.

Overland

Every part of every Overland is made in the Overland plants. We make what others are forced to buy. The motor and all of its parts—the frame—crank shafts—springs—axles—steering gears—transmissions, etc.—in fact, everything from the smallest bolts to the big, handsome body is made by Overland men in Overland factories.

This, and only this, method of production can produce accuracy to the 1/1000 part of an inch.

Stop and make a few comparisons. Take the specifications of any other car of a given price and see the better value you get in an Overland. Compare the wheel base—the type of motor—the size of the wheels—the capacity. Compare the design—the body work—the finish and trimming.

Then note the distinguished and striking appearance of the Overland. Particularly our Fore Door, which is the design of the year. And the Fore Door costs no more.

There are 22 different Overland bodies to choose from, made on five styles of chassis. You have your choice of Roadsters, Coupes, small or large Touring Cars, with Fore Doors, or Open Fronts, or Torpedo Bodies. Prices range from \$775 to \$1675.

There's an Overland dealer near you who will be glad to explain the greater Overland value. Write to-day for the beautiful Overland Catalogue I, which describes and explains all the models in detail.

THE WILLYS-OVERLAND COMPANY, Toledo, Ohio



TAKES NOTICE OF COMMERCIALS

N. A. A. M. Creates Committee to Deal with Them—Other Committees Named—Profits of the Chicago Show.

At its regular monthly meeting in New York on Wednesday of last week, 1st inst., the executive committee of the National Association of Automobile Manufacturers took cognizance of the truck situation. Not only was a new Committee on Commercial Vehicles created, but having in mind the demands made upon manufacturers to participate in local shows, contests and all other manner of exploitations, the N. A. A. M. decided to suggest to the trade that no contracts be entered into with promoters of such affairs until the new show committee has met and fully discussed the subject. This show committee will meet on Wednesday, April 5th. The Committee on Commercial Vehicles which was created is composed of E. S. Kelly, S. D. Waldon and Walter C. White, who were given power to select two additional members.

The title of the Contest Committee also was changed. Hereafter it will be known as the Committee on Contests and Demonstrations, the new title being due to the belief that demonstrations of commercial vehicles rather than contests between them shall be promoted. The members of this committee are H. O. Smith, chairman, Windsor T. White and Benjamin Briscoe.

President Metzger, who presided for the first time, also announced the make-up of the other national committees as follows:

Traffic Committee: A. L. Pope, chairman, L. H. Kittredge, W. R. Innis.

Membership Committee: J. W. Gilson, chairman, S. T. Davis, Jr., Thomas Henderson.

Show Committee: Thomas Henderson, chairman, A. L. Pope, H. O. Smith.

Good Roads Committee: R. D. Chapin, chairman, S. D. Waldon, C. C. Hildebrand.

Legislative Committee: S. T. Davis, Jr., chairman, Benjamin Briscoe, Charles Clifton.

Auditing Committee: Benjamin Briscoe, chairman, S. T. Davis, Jr., Charles Clifton.

The report on the Chicago show, which was rendered at the meeting, disclosed that that function was the most successful one ever held under the auspices of the association. It enriched the N. A. A. M. treasury to the extent of approximately \$45,000, making the balance in the exchequer nearly \$90,000.

The meeting also took a step toward closer relationship with the American Automobile Association by appointing a conference committee which will discuss with the officers of the A. A. A. all matters of mutual interest. This conference committee comprises the chairmen of the legislative, good roads and contests and demonstrations committees.

General Electric Takes Up Magnetos.

The big General Electric Co. has added magnetos to its varied productions. The new magneto, which is being produced at the Lynn (Mass.) works, is of the low tension type, possessing no very radical features. It operates in connection with an external transformer coil and synchronous distributor mounted on the front of the magnets. While it has been in process of development for some time, the system did not make its appearance until this week, when it was disclosed for the first time at the Boston show.

Goodrich Organizes Company in France.

The Societe Francaise B. F. Goodrich Co. has been incorporated in France to take care of the business of the B. F. Goodrich Co. in Great Britain and on the continent and to operate the plant at Colombes, near Paris, which recently was purchased. The B. F. Goodrich Co. at present is designing special machinery for the foreign factory and expects to have it installed and producing rubber goods, tires particularly, before the end of the summer.

SPRING WHEEL SHARES FOR 50 CENTS

Chance for Poor and Humble to Get Into \$500,000 Company—Invention Good Enough to Inspire Poetry.

Thanks to the Multiple Spring Wheel Co., of Boston, which is in Massachusetts, it now is possible for even the office boy or the housemaid to become a bloated stockholder and to assist in the twenty-year-old campaign to put the pneumatic tire out of business.

Undeterred by the frigidity encountered by L. L. Rogers and his Unika spring wheel, who and which only recently made their appearance in Boston, the Multiple Spring Wheel Co. has boldly shied its castor into the Hub—at 40 Huntington avenue, to be exact. Unlike Rogers, however, the Multiple Spring Wheel people are not avowing that they can obtain "hundreds of thousands" of capitalistic coin "any day, any hour," but, like Rogers, the Multiple principals are offering their stock at half price. The difference is so greatly in favor of the Multiple scheme that, as suggested, it offers attractions even to the office boy. To permit entry on "the ground floor" of the Unika, \$10 shares were offered for \$5; to become a part of the Multiple Spring Wheel Co. requires but 50 cents, and even this sum may be paid on the instalment plan, though, of course, it earnestly is hoped that none will limit himself to such paltry sums.

The stock itself, of which there are 500,000 shares, has a par value of \$1, but the early bird can pick it up for half of that price, although it was due to be advanced to 75 cents during the present week. Before the 50 or 75 cent investors receive their certificates, however, their subscriptions must be accepted by the Manufacturer's Securities Co., which, oddly enough, also is located at 40 Huntington avenue, Boston, Mass.

The officers of the Multiple Spring Wheel Co.—which is a Delaware corporation—are: Edwin J. Kraetzer, president; J. Albert Chessman, treasurer; E. L. Woodard, secretary. The officials of the Securities company are not named.

The wheel itself and the company are on exhibition at the Huntington avenue address. There also are in evidence two or three chairs and a desk. A very earnest and urbane man demonstrates the wheel and an equally earnest woman occupies the desk. The wheel is a variation of the old, familiar type which for so many years has been tilting and rettiling at the pneumatic tire. It is the invention of Edwin J. Kraetzer, president of the company, and it is of such an inspiring character that it has moved Edith Louise Woodard to verse. She has written a poem—a real poem—about it and has dedicated it to the inventor. The poem forms a part of the company's literature, and that it is a gem serene, and one calculated to wring 50-cent pieces from any man or woman possessed of a soul, let the verses themselves prove:

The age of the automobile,
The horse-less carriage is here;
And of the many varieties
Which for pleasure or load we steer,

A resilient wheel had not been found
That in test would prove a success,
And so we've used pneumatic tires
And been caught in many a mess.

The correct spring wheel has now been found
To make the auto a great success,
It causes us all to look around
For trucks can be a perfect express.

A Multiple Spring and a lock device,
Securely bolted and sheltered
'Neath shield, then the spokes and rim so nice,
With the whole most firmly fettered.

Made for any weight and any size,
Is the Multiple Steel Spring Wheel;
'Twill carry the load over the road
On the truck or automobile.

No more delays or hold-ups now,
No more punctures or explosions,
But round and round the wheel goes on,
For business or excursion.

To tour the world, this wheel you'll use
In every clime a pleasure,
It's a safety wheel, a resilient wheel,
And a perfect shock absorber.

More Trucks Coming from Michigan.

D. F. Poyer, of Menominee, Mich., who has been engaged in the automobile business for a long term of years, has formed a partnership with W. S. Carpenter, president of the Lumbermen's National Bank, under the firm name of D. F. Poyer & Co., and will begin the manufacture of light delivery wagons in Menominee. They have leased a former garage building, which is to be equipped as a factory, and expect to begin operations with a force of about 25 men. One of the wagons, which will be styled the Menominee, already has been in successful use for several months.

Two Truck Companies Are Consolidated.

The American Motor Truck Co., of Lockport, N. Y., has been merged with the Findlay Motor Co., of Findlay, O., of

which L. E. Ewing is president, and the Lockport plant is being dismantled and the machinery removed to the Ohio city. The Findlay company manufactured light delivery wagons and the American company made trucks of the larger sizes, the production of both of which will be continued on a more extensive scale, plans for the enlargement of the Findlay factory already being in hand.

Haynes Rises Superior to Fire.

Despite the disastrous fire on February 28th, which wrecked the greater part of its factory in Kokomo, Ind., the Haynes Automobile Co. rose to the occasion so well that on the Saturday following, it completed the first chassis in the temporary quarters that have been secured, and each day since it has made plainer that the fire, serious though it was, will not interrupt the Haynes business in any such measure as appeared probable. Plans for the erection of a newer and larger factory already are in hand and building operations will begin as soon as the insurance adjusters have finished their tasks.

It is expected that the new plant will be completed within 60 days. In the meantime the Haynes cars will be built in temporary quarters, and as all office records and all patterns were saved, and as large quantities of material were stored in buildings far removed from the fire, and as much more of it since has been ordered and received, the situation has been greatly relieved. While the flames destroyed three wings of the factory, as the Motor World stated last week, several departments escaped and have continued in operation. These are the departments dealing with blacksmithing and drop forging, motor testing and motor assembling, upholstering, spare parts, draughting and experimenting.

Engine Makers Sue and Are Sued.

The Model Gas Engine Co., of Peru, Ind., and the Republic Motor Car Co., of Hamilton, O., have locked horns in a dispute over a number of motors supplied by the former. The engine makers sued for \$6,917.54, the value of the engines, and the Republic company has countered with a suit for \$16,624.33, alleging that it had suffered damage to that amount because of the failure of the engines to come up to specifications, and which they offered to return.

Nyberg Gets the Rider-Lewis Factory.

The identity of the purchaser of the Rider-Lewis factory in Anderson, Ind., which has been in the hands of a receiver for several months, has been disclosed. He is Henry Nyberg, of the Nyberg Automobile Works of Chicago. The purchase price was \$40,000 and payment is to be made in instalments of \$5,000 each. The first instalment was paid on the 6th inst.,

when Mr. Nyberg assumed control of the plant, although the receivership of the Rider-Lewis company will continue and the title to the property will remain vested with the receiver until the full amount is paid. The factory is a one story structure, 500 x 100 feet, with two large wings. It is completely equipped and well stocked with materials which will be converted into the Nyberg "30" and Nyberg "32." The Nyberg Automobile Works' salesrooms at 2437 Michigan avenue, will be continued as a distributing point.

Unusual Transaction Leads to Lawsuit.

Peter N. Leone, of Hartford, Conn., last week obtained a verdict of \$2,575 from a jury in the superior court of that city against the I. & F. Motor Car Co., which recently removed from New Britain to Branford, Conn. Leone had made an arrangement with the I. & F. Co., according to which he was to deliver to the defendant an automobile in good running order and in return the company was to deliver to him 1,000 shares of the stock of the company, of the par value of \$1 a share, and a new four-passenger automobile. The stock was delivered to Leone but the motor car never was, and he sued for \$3,000 damages. The defense was that the automobile which Leone delivered to the I. & F. Motor Car Co. was not in good running order, and that he had refused to put it in such condition though requested to do so.

January's Tire Exports Exceed \$200,000.

Rubber tires for automobile use to the value of \$175,743 were exported during the month of January, 1911, while carriage, bicycle and other tires reached a total of \$33,227. No figures are available for comparison with the month of January in 1910, as this is the first fiscal year that tires are being listed independently in the Federal statistics. For the seven months of the fiscal year beginning July 1, 1910, \$1,015,673 worth of automobile tires and \$319,022 worth of other tires were sent abroad from the United States.

Packers' Truck Removes to West Virginia.

The Packers' Motor Truck Co., of Pittsburgh, Pa., is engaged in removing to Wheeling, W. Va., where it will locate in a comparatively new factory which was vacated by an axle company. It is located in the Loveland section of Wheeling, and it is expected that the plant will be in operation within a month.

Booth Doubles Capital and Will Enlarge.

The Booth Demountable Rim Co., of Cleveland, O., has increased its capital stock from \$100,000 to \$200,000, and will immediately enlarge its facilities to permit of an output of 100 sets of rims per day. The new shares were subscribed for within one hour after their issuance was decided on.

JANUARY EXPORTS MAKE A RECORD

Shipments During Opening Month of New Year Pass Million Mark—Canada Still Remains the Heaviest Buyer.

In the matter of exports, the year 1911 opened with a new record to its credit, the total valuation of the foreign shipments during the month of January attaining a value of \$1,135,299, as compared with \$718,950 during January of last year. The shipments were made up of 924 cars, valued at \$969,930, and parts to the value of \$165,369, as against 492 cars, value \$582,255, and parts valued at \$136,335 in the corresponding month of 1910.

As in preceding months, Canada remained the heaviest buyer of American-made automobiles, taking \$439,706 worth, or almost 50 per cent. of the total exports. Great Britain is the next largest purchaser, with \$194,589 to its credit, as compared with \$176,806 in the same period of last year. Remarkable increases were shown by South America, Asia and Oceania. South America increased its quota from \$20,818 in January of 1910 to \$85,413 in the same month of 1911, a gain of over 300 per cent. British Oceania took \$102,566 in January, 1911, as against \$40,874 in the same month of last year, an increase of 150 per cent. Other Asia and Oceania, too, recorded a heavy gain, increasing its purchases from \$18,156 in January, 1910, to \$73,583 in the corresponding month of the succeeding year, a gain of 305 per cent.

In the seven months of the Government's statistical year from July, 1910, to January, 1911, inclusive, the gain has been very great. With the exception of France and Bermuda every one of the twelve divisions increased its purchases, the two exceptions mentioned accounting for an aggregate loss of only \$80,000, while the gains amounted to \$2,407,785, or a little over 55 per cent. The total figures for the seven months show \$6,908,346 worth of American automobiles and parts exported, as against \$4,491,561 in the same period of the preceding year. The report in detail follows:

	January		Seven Months End'g January	
	1910	1911	1909	1911
Automobiles and Parts of—				
Automobiles	\$582,255	\$969,930	\$1,950,143	\$3,795,952
Parts of (not including tires)	136,335	165,369	321,406	695,609
Exported to—				
United Kingdom	176,806	194,589	682,324	1,060,464
France	30,366	31,342	136,377	318,270
Germany	6,292	3,731	58,402	104,515
Italy	13,970	30,000	40,167	25,761
Other Europe	18,875	20,071	121,089	132,553
Canada	269,111	439,706	667,902	1,627,804
Mexico	47,926	56,043	186,478	292,013
West Indies and Bermuda	68,236	61,788	146,989	248,932
South America	20,818	85,413	64,692	170,979
British Oceania	40,874	102,566	68,883	259,626
Other Asia and Oceania	18,156	73,583	58,649	168,976
Other countries	7,160	36,467	39,597	81,668
Total	\$718,590	\$1,135,299	\$2,271,549	\$4,491,561
				\$6,908,346

Changes Among Prominent Tradesmen.

J. F. Corl has been appointed manager of the Rapid Motor Vehicle Co., of Pontiac, Mich, succeeding George A. Horner. Previously Corl was engaged in the piano manufacturing business in Battle Creek.

C. H. Martin has resigned the sales management of the Morgan Motor Truck Co., of Worcester, Mass., and will go into business on his own account. He has in view the establishment of a new department of the motor truck business.

Robert Jardine, who has been responsible for the design of several well known American cars, has joined the staff of the T. B. Jeffery Co., of Kenosha, Wis. He will be a member of the designing department for which his long experience qualifies him.

Harry L. Bill has been designated assistant general manager of the Metzger Motor Car Co., of Detroit. Formerly he was production manager of the Chalmers Motor Co., previous to which he was identified with the Corbin Motor Vehicle Co. and the Standard Roller Bearing Co.

D. C. Fenner, who previously was connected with the Knox Automobile Co., has been appointed sales manager of the Alden Sampson Mfg. Co., of Detroit. He succeeds C. E. Stone, who has been transferred to the general sales department of United States Motor Co., in New York.

F. E. Moscovitz has been appointed general sales manager of the Remy Electric Co., of Anderson, Ind., and will have to do with prosecuting the aggressive policy of marketing the new Remy combination igniting and illuminating system. Moscovitz has a rich fund of experience in every department of the automobile industry.

W. H. VanDuzen having resigned the office, George Fitz-Simons has been chosen sales manager of the E. R. Thomas Motor Co., of Buffalo, N. Y. During 1909 and 1910 Fitz-Simons was sales manager of the Eastern department of Studebaker Bros. Co. in New York, but for the year past he has been the Packard agent in Atlanta, Ga. Edward Wells, who was in the Thomas sales department, has been promoted to the post of assistant general manager.

FINE PROFITS FROM TAIL LIGHTS

But to Obtain Them Many Laws Must be Changed—Meanwhile Stock is for Sale at Bargain Prices.

Anyone with 50 cents to invest who is not inclined to put it into Multiple spring wheels, or other devices designed to displace the pneumatic tire, need not go far to find a place for it. The Combination Tail Light and Illuminated Automobile Number Corporation, whose habitat, like that of the Multiple wheel, is Boston, Mass., is also bidding for the money. It is incorporated under the generous laws of Maine, and the par value of its shares, too, is but \$1, but those who avoid the rush can buy it just now for 50 cents per share.

The nature of the company's product is indicated by the title of the concern. The device is the invention of E. Ellsworth Poole, who is president and treasurer of the corporation with the long name. He is a Boston jeweler and optician, and desires it known that his is "not a promoter's scheme," and, according to his reasoning, his combined tail light and illuminated number is "a guardian of public safety that will rank with the famous block system."

The cost of its manufacture is "very small" and the profit on its sale is a "handsome" one, so that the corporation "probably will pay a dividend the first year," all of which, be it understood, are the remarks of Mr. Poole himself.

The Poole device, of course, "will do away with the old-fashioned tail light now in use," which makes plain how really handsome will be the profits. The one thing that stands in the way is the fact that practically each state has a registration plate all its own, and that its design and color is changed each year. However, this comparative trifle may be overcome, as the Combination Tail Light Etc. corporation announces that it is its intention to "promote legislation in every state in the Union" to adopt its light and glass transparency.

Pending the enactment of such legislation, investors are free either to have stock reserved for them or to pay for it in cash. The literature of the company includes blank forms for both purposes. "If your money is at hand, be sure and use the cash form and forward it at once," is one of the concluding paragraphs of the corporation's urgings.

Bretz Resumes Hartford Sales Agency.

After a lapse of a year the J. S. Bretz Co., of New York, again has assumed the sole selling agency for the Hartford Auto Parts Co. Not only will the stock designs of the Hartford universal joints and cone clutches be carried, but special patterns will be made to order.

IN THE RETAIL WORLD.

The Otto Motor Car Co., of New York City, has opened a Brooklyn branch at 1176 Bedford avenue.

Tymon Gatzmeyer has "opened up" in Coleridge, Neb., where he will mix auto supplies with agricultural implements.

The Acme Automobile Co., of Covington, Ky., has opened a branch in Cincinnati, Ohio. It is located at 815 Race street.

Gustav F. Reinhard is building a garage at 258-262 Halsey street, Newark, N. J. It will be 50x75 feet, of brick, one story high.

E. W. K. Burg has taken the agency for Hupp-Yeats electric cars for Toledo, Ohio, and opened salesrooms at 1006 Madison avenue.

R. G. Schultz has obtained the New Jersey agency for Torbensen trucks and opened salesrooms at 48-50 Orange street, Newark, N. J.

The Highland Motor Garage, 266-268 27th street, Milwaukee, Wis., has changed its name to Boulevard Motor Garage. Hal-laday cars are handled.

Charles Corey and John Leever have formed the Buckeye Garage Co., and taken over the former Shepherd Garage, at 8 High street, Hamilton, Ohio.

R. T. Mellis and L. A. Briggs, have opened a garage and accessories store in Dond du Lac, Wis. They will do business under the firm name of Mellis & Briggs.

A. T. Roberts & Sons, Marmon agents at Rockford, Ill., have added commercial trucks to their line of pleasure cars. They will handle the Van Dyke delivery wagon.

Frank Judd has organized the Judd Garage & Sales Co., in Cleveland, Ohio. He has leased the building formerly occupied by the Standard Automobile Co., at 1206 Huron road.

Salesrooms have been opened in St. Paul, Minn., by the Morgan-Luse Motor Co., of which E. W. Morgan is the manager. The company will handle Stegeman trucks and Dahl tires.

George L. Dwinnell has opened a store at Waukesha, Wis., where he will deal in automobiles and automobile supplies. He will also handle horsedrawn vehicles and agricultural implements.

The W. L. Hoffman Auto Co., of Omaha and Lincoln, Neb., has invaded Iowa, and opened salesrooms at 527 Douglas avenue, Sioux City. R. A. Dewitt, of Lincoln, will be in charge of the Iowa branch.

Mansuay & Smith, the oldest carriage dealers of Hartford, Conn., have decided to enter the automobile field, and taken the agency for Abbott-Detroit cars. Their salesrooms are at 19-21 Elm street.

S. C. Igou, formerly with the Moon Motor Car Co., has gone into business in St. Louis on his own account as agent for

Bergdoll cars. He shortly will open salesrooms and a garage on "automobile row."

W. B. Thorn, who conducted a garage at 40 West 66th street, New York City, has sold the three-story building to the West Side Branch of the Y. M. C. A., which will occupy it as an automobile school.

Edward Weiser, formerly with the Hamilton (Ohio) Motor Car Co., has opened a garage on his own account in that city at 108 North Monument avenue. In addition to garaging and repairing he will carry supplies.

The Wissman Auto Repair Co. is the style of a new concern which just has opened up at 6504 Euclid avenue, Cleveland, Ohio. J. C. Kocian, J. H. Wissman and William J. Cermack constitute the company.

The Standard Garage Co. has been organized in Fairmont, W. Va., and salesrooms and a garage have been opened on Third street, with Harry Hollendyke as manager. He will display Overland and Packard cars.

F. G. Bierlein, of Los Angeles, Cal., has purchased the interest of Leon T. Shettler in the Autocar Equipment Co., which is one of the largest accessory houses in Los Angeles. C. W. Sahland is the manager of the company.

After having occupied salesrooms in the Plaza Hotel, New York City, for several months, the Carhartt Automobile Sales Co. has joined the movement uptown. It has opened new headquarters at 1989 Broadway, near 68th street.

Don Lee, of Los Angeles, Cal., has opened a branch at 384 Golden Gate avenue, San Francisco, Cal., where he will display Cadillac cars. He will do business under the style of the Don Lee Co., Phil Prather acting as his manager.

The George W. Merrill Auto Co., now located at 910 Second avenue, Spokane, Wash., soon will move into new salesrooms on the same street. The new building will be 50x142 feet, is to cost \$20,000, and will house Thomas and Overland cars.

W. J. Taylor has been appointed receiver of the Standard Automobile Co., of Houston, Texas, on application of H. A. Paine, a stockholder. The company was organized April 1, 1910, with a capital of \$15,000, with E. E. Guthrie as president.

The Crawford-Thompson Co. has established salesrooms at 1849 Broadway, New York City, where it will display Henry cars. Walter S. Thomson is president. Robert D. Radcliffe vice-president and William Crawford treasurer of the new company.

Heralded as the finest and largest and most up-to-date garage in the whole state of Michigan, the new garage of the Becker Auto Co. of Grand Rapids, Mich., has

opened its doors at the corner of Sheldon and Island streets. Ford cars will be shown exclusively.

Operating under the firm name of Mathis & Martin, a new concern is preparing to open a garage in the city of Goliad, Tex. The new business will be located in the Wheeler Pettus building.

The Dubuque Auto Garage, at the corner of Sixth and Iowa streets and that of Brandt & Skeltler, at 665 Iowa street, Dubuque, Ia., have been consolidated under one management. The business henceforth will be conducted by H. N. Brandt, as general manager, assisted by S. Skeltler.

Victor A. Wiss & Bro., the Cadillac agents in Morristown, N. J., are adding a concrete extension to their already large garage. When completed the building will be 80x191 feet, all on one floor and without posts of any sort, and will be one of if not the largest structure of the kind in New Jersey.

Under the style of the Commercial Motors Co., a salesroom for motor trucks has just been opened in Los Angeles, Cal., at 324-362 Central avenue. J. Lawrence Eigholz is general manager of the company, which has the Pacific Coast agency for the Victor, Saurer, Remington, Adams and Chase trucks.

A petition in voluntary bankruptcy has been filed by Michael A. Gerber, president and treasurer of the Minneapolis Motor & Truck Co., showing liabilities of \$34,061.09 and assets of \$3,934. Some time previous to the filing of this petition proceedings had been started by several creditors of another company in which Gerber is interested.

Cincinnati Dealer Accuses His Brother.

George J. Slanine has been appointed receiver for the Crown Automobile Co., which has been doing business on Eighth street and at the corner of June street and Reading road, Cincinnati, Ohio. Bankruptcy proceedings were started by Conrad Wendel, formerly president of the company, who charges that the management of the company was completely taken away from him by his brother, Dr. Henry C. Wendel, and that the latter is now conducting the company as if it were his own, although Conrad Wendel claims to own 97 of the hundred shares of the company. He also claims that between February and September, 1910, he was in the employ of the company, and it sold 60 automobiles, at an average commission of \$320, making a total commission of \$19,200, besides what was received for repair work. He claims that Dr. Wendel received all the money, but that the latter nevertheless asserts that the company suffered a loss of \$8,000. He charges mismanagement, and wants the corporation dissolved and Dr. Wendel enjoined from acting for it.

THE WEEK'S INCORPORATIONS.

Detroit, Mich.—Morton Motor Car Co., under Michigan laws, with \$5,000 capital; to manufacture and deal in automobiles.

Detroit, Mich.—Phipps-Grinnell Auto Co., under Michigan laws, with \$100,000 capital; to manufacture automobiles.

Cincinnati, Ohio—Auto Spring Co., under Ohio laws, with \$19,000 capital; to manufacture springs. Corporators—Alfred J. Swing and others.

Kansas City, Mo.—Mutual Auto Truck Co., under Missouri laws, with \$5,000 capital. Corporators—W. R. Sober, Benjamin F. Garlock, Flournoy Quest.

Rutherford, N. J.—Bridge Street Garage, under New Jersey laws, with \$100,000 capital. Corporators—Sandford D. Ely, M. Elmer Fake, J. Samuel Dressler.

Richmond, Ky.—Citizens' Motor Car Co., under Kentucky laws, with \$1,000 capital; to deal in automobiles. Corporators—W. C. Bennett, F. West, J. H. Dean.

South Bend, Ind.—Frazier & Frazier, under Indiana laws, with \$3,000 capital; to deal in automobiles. Corporators—C. H. Frazier, J. R. Frazier, Clara Frazier.

Urbana, Ill.—Urbana Automobile Co., under Illinois laws, with \$2,175 capital; to deal in automobiles. Corporators—John F. Miller, John W. Moonan, C. L. Miller.

Sauk City, Wis.—Keurth-Schaefer Auto Co., under Wisconsin laws, with \$10,000 capital; to deal in automobiles. Corporators—R. Hokanson, Wm. Thompson, Geo. P. Miller.

Oak Park, Ill.—Oak Park Auto Exchange, under Illinois laws, with \$2,500 capital; to deal in motor vehicles. Corporators—T. J. Shanahan, H. P. Kroencke, R. H. Mather.

Ogden, Utah—Motor Sales & Garage Co., under Utah laws, with \$12,000 capital; to deal in automobiles. Corporators—A. S. Meserve, F. S. Voorhees, R. M. Austin, Jed Ballantine, R. M. Grange.

Boston, Mass.—Multiple Spring Wheel Co., under Delaware laws, with \$500,000 capital; to manufacture spring wheels. Corporators—A. E. and H. P. Knowlton, J. F. Sanborn, all of Boston.

Augusta, Mo.—Briggs Mfg. Co., under Maine laws, with \$200,000 capital; to manufacture magnetos, automobile and electric specialties. Corporators—R. S. Buzzell, M. M. Farrar, C. L. Andrews.

Boston, Mass.—Proctor Automobile Co., under Massachusetts laws, with \$50,000 capital; to deal in motor vehicles. Corporators—Roland Litchfield, Pauline H. Simons, Samuel J. Freedman.

Chicago, Ill.—L. P. Halladay Co., under Illinois laws, with \$2,500 capital; to deal in automobiles, supplies and accessories. Corporators—Clair E. More, Charles King Sherman, Almon W. Buckley.

Bridgeport, Conn.—Waldorf Motor & Machine Co., under Connecticut laws, with \$5,000 capital; to manufacture internal combustion motors. Corporators—Charles E. Waldorf, Bertha E. Steeves.

Dover, Del.—Merchants' Motor Truck Co., under Delaware laws, with \$500,000 capital; to manufacture motor trucks. Corporators—W. F. P. Lofland, W. L. N. Lofland, J. S. Collins, Jr., all of Dover.

Columbus, Ohio—Motorette Co., under Ohio laws, with \$10,000 capital; to conduct general automobile business. Corporators—Harry McElroy, Katherine McElroy, Frank McElroy, William M. Fisher.

Detroit, Mich.—Star Carbureter Co., under Delaware laws, with \$100,000 capital; to manufacture carbureters. Corporators—T. J. McCarthy, M. Carmichael, of Detroit; H. W. Davis, Wilmington, Del.

Philadelphia, Pa.—Breech-Block Demountable Rim Co., under Delaware laws, with \$300,000 capital. Corporators—W. Y. Irwin, I. T. Sayre, J. W. Ford, all of Philadelphia; A. D. Foucart, Muncie, Ind.

Lansing, Mich.—The B.-O.-S.-S. Co., under Michigan laws, with \$250,000 capital; to manufacture and deal in motor vehicles. Corporators—Frank E. Bowen, John A. Olson, Frank Stratton, Frank A. Smith.

Cleveland, Ohio—Cleveland Rubber & Supply Co., under Ohio laws, with \$10,000 capital; to deal in automobiles and parts. Corporators—M. J. O'Connor, R. A. Wilbus, A. Dale, A. Gaulty, C. S. Wachmer.

Devil's Lake, N. D.—Duplex Multi-Spark Plug Co., under North Dakota laws, with \$5,100; to manufacture spark plugs. Corporators—H. E. Maher, Clarence E. Burgess, J. R. Kollar, all of Devil's Lake.

Canton, Ohio—Auto Service Co., under Ohio laws, with \$10,000 capital; to conduct an automobile livery service and garage. Corporators—R. B. Kuhn, H. N. Botkins, F. N. Lehman, C. F. Cole, F. A. Alexander.

Brooklyn, N. Y.—Sirocco Motor Car Heating Co., under New York laws, with \$5,000 capital; to manufacture automobile heaters. Corporators—Charles A. Prescott, Chester A. Barley, Frank M. Knauss.

Grand Rapids, Mich.—Oswald Motor Car & Supply Co., under Michigan laws, with \$12,000 capital; to manufacture and sell automobiles and supplies. Corporators—Charles J. Oswald, 90 shares; Frank P. Oswald, 20 shares; Edward G. Winchester, 10 shares.

Brooklyn Kissel Kar Co., under New York laws, with \$5,000 capital; to deal in automobiles. Corporators—Max J. Wolfe, Belle W. Wolfe, 98 Hooper street; Rose A. Bellew, 190 Nostrand avenue, all of Brooklyn, N. Y.

Boston, Mass.—La Court Portable Motor Co., under Massachusetts laws, with \$25,000 capital; to manufacture and deal in automobile supplies. Corporators—P. La

Court, Beverly; M. Miltontaler, Somerville, Mass.

Springfield, Ohio—Springfield Vulcanizing Co., under Ohio laws, with \$10,000; to conduct garage and tire repair business. Corporators—Carl W. Fritz, Helen F. Fritz, Harley G. Root, Edith C. Root, Jasper H. Lawwill.

Watervliet, N. Y.—J. M. Jones Sons; under New York laws, with \$100,000 capital; to manufacture automobiles and railroad cars. Corporators—John H. Jones, James H. McLeese, Floyd R. Jones, Paul R. Jones, all of Watervliet.

Detroit, Mich.—Detroit Foundry & Mfg. Co., under Michigan laws, with \$50,000 capital; to manufacture castings for automobile use. Corporators—John T. Rich, Dr. D. A. McLachlan, Jonathan Palmer; George E. Lawson, Charles H. Berger.

South Bend, Ind.—Studebaker Vehicle Co., of New York, with capital stock of \$8,600,000, of which \$400,000 is represented in Indiana; to manufacture vehicles, motors, boats, harness and all kinds of machinery. Corporators—F. P. Delafield, F. W. Longfellow, Clement Studebaker, Jr., Scott Brown, J. B. Marsh, F. S. Fish, F. Q. Stevens.

St. Louis, Mo.—Steinhauer Truck & Motor Car Co., under Missouri laws, with \$250,000 capital; to manufacture and deal in vehicles and motor vehicles. Corporators—Peter P. Probst, William Fraeckenschmidt, Alonzo Dryer, John W. Wright and Edward W. Krestner, 40 shares each; James Dawes and Nickolaus Fehrenbach, 80 shares each; Paul A. H. Trennies, 50 shares; W. Antoine Hall and Adolph Kraeter, 1,100 shares each; Peter Steinhauer, 600 shares; Richard Shoul, 2,100 shares; Richard Shoul, trustee, 4,090 shares.

Recent Losses by Fire.

Indianapolis, Ind.—C. F. Caplinger, 723 East 28th street; garage destroyed, contents saved. Loss, \$500.

Toledo, Ohio—Union Supply Co., 323 Warren street; building and three automobiles destroyed. Loss, \$6,500.

Newark, N. J.—Roseville Motor Co., Orange and 14th streets; building and 22 cars destroyed. Loss, \$30,000.

Buffalo, N. Y.—Norwood Garage, 121 Norwood avenue, Nelson P. Baker, owner; building and 17 automobiles burned. Total loss, \$55,000; \$15,000 of which was covered by insurance.

Increases and Decreases of Capital.

Anderson, Ind.—Remy Electric Co., to \$1,000,000.

Racine, Wis.—Racine Mfg. Co., from \$600,000 to \$800,000.

Chicago, Ill.—C. A. Coey Auto Service Co., from \$200,000 to \$5,000.

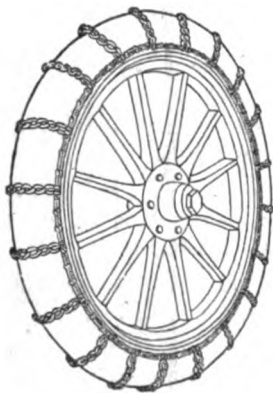


Don't Swear at the Road !

Even if snow, ice or sleet have made it almost impassable and full of ruts;
Even if heavy rains have fallen, softening and churning up the mud;
Even if the Asphalt, Creosote Block or Macadam Pavement is slippery and uncertain.

When you have **Weed Chains** on your wheels you can run along with perfect confidence, knowing well that this simple, efficient, time-tried, never failing device will prevent skidding and slipping absolutely.

Only foolish, inexperienced drivers dare leave the garage without **Weed Chains**.



Weed Anti-Skid Chains

(With the "Creeping Grip")

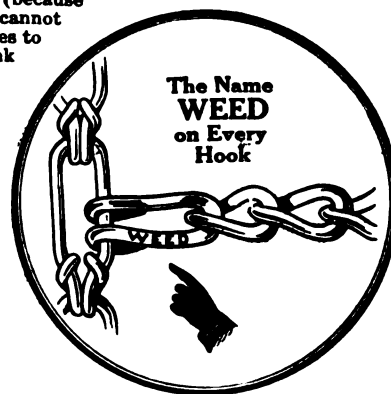
are a necessity, not merely a convenience. No one should leave the garage without a full equipment of Weed Chains. "As necessary as gasoline." Not an experiment. The perfected result of years of mechanical engineering, expensive tests and practical experience. All kinds of roads look alike to the car that carries **Weed Chains**—deep ruts, slippery pavements, heavy sand; it's all the same—a **start** with **Weed Chains** means a **finish**.

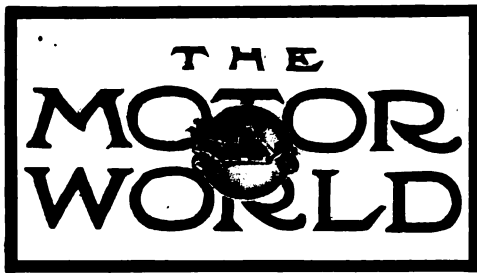
Do not Injure Tires Weed Anti-Skid Chains (because of the "Creeping Grip") cannot injure tires; they actually preserve them. They are made in sizes to fit every tire, so be sure to get the right size. Too heavy a link will ruin a small tire. Tire preservation means money and worry saved. Your dealer knows. Many Manufacturers will not guarantee a tire unless a Weed Chain is used with it.

Every reputable dealer in every part of the country carries repair parts which are interchangeable on any and every Weed Chain. If your dealer happens to be out of them for the moment, send us his name and we will see that you are supplied immediately. The name **Weed** on every connecting hook. Cross Chains all brass plated; every link electrically welded and highly tempered; almost as smooth as glass and as hard as a diamond without being brittle.

No Trouble to Put On —you don't need a jack—and the little bundles that they make in their canvas bags take scarcely any room. Weed Chains are the only successful anti-skid devices, which are guaranteed to the limit by a responsible manufacturer. They save the tires and, because they're reversible, they save themselves—two chains in one. A chain on each rear wheel is car and passenger insurance, and if you want to know what real steering steadiness means, put them on your front wheels too. **Weed Anti-Skid Chains** increase your brake power.

WEED CHAIN TIRE GRIP CO. 28 Moore Street NEW YORK CITY





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"Enclosed is renewal of my subscription for the Motor World. I surely would miss its weekly visits."—Howard M. Ogden, New Canaan, Conn.

Circus Methods as Applied to Trucks.

Both the National Association of Automobile Manufacturers and the Manufacturers' Contest Association having created special committees to deal with commercial vehicle affairs, it is probable that something will be done to check the inclination apparent in many directions to exploit the motor truck by circus methods.

There are those interested in its sale who seemingly cannot accept it at its true value, and who appear to fancy that the way to promote its use is by a banging of cymbals and a fluttering of flags. The sooner they bring themselves to realize that not effervescence but calm deliberation and cold calculation are the qualities that inspire the purchase of motor trucks, the bet-

ter will it be for all concerned in their manufacture and distribution.

Fizz and fireworks are essentially the accompaniments of sport and play, and may not be out of place when employed to exploit mediums of pleasure, as, for instance, a touring car, but when applied to serious and wholly commercial and book-kept productions, the man who imagines that any excitement they may create is of more than fleeting value is due for an unpleasant awakening.

In the sense in which the term generally is used, the motor requires little exploitation, and will not stand a great deal of it. There is not lacking abundant evidence that the chief purpose that will be served by circus methods is not the arousing of merchants to the value of horseless wagons, but the flooding of the market with an overplus of such vehicles. The rush in that direction already is strongly developed, and if it is continued mischief cannot fail to result.

The trend nowadays is toward the organization of companies for the production of trucks, and many fingers will be burned unless caution is exercised. There is only one thing worse than a half-baked pleasure car, and that is a half-baked truck.

Bitterness of Mid-Season Announcements.

According to reliable information, orders for April and May deliveries, particularly of the higher priced cars, are unusually heavy, and those in position to speak express the belief that if no cloud mars the horizon a good business will be done well into the month of June. The one cloud which they most fear is the announcement of so-called 1912 models before this desirable business has been garnered.

In other years this desire to "crowd the season" by too early announcements of new models has had the almost immediate effect of checking orders for the current types and creating semi-stagnation which it were easy to avoid. To use every legitimate means to prevent such stagnation ought to be the effort of everyone identified with the industry, and it is to be hoped that the idea will obtain more general lodgment.

While early announcements of new models may make the announcer appear extremely "foremost," there is another angle from which they are seldom viewed. It will require small inquiry to discover that

nothing serves to make a purchaser more disgruntled than to learn that by waiting but a few days or a few weeks he could have obtained an "improved" model for the same money or the same model at a smaller price. It usually will be found that he feels that he has been "goldbricked," to use an expressive term, and that he harbors no kindly feelings for the man of whom he purchased his car, and who, he rightly or wrongly thinks, should have informed him of what was impending.

If manufacturers who reduce prices or announce new models during mid-season would but put themselves in the purchaser's place, they probably would feel the same way about it. And it isn't a half bad idea for any manufacturer or dealer occasionally to place himself in that position. It frequently will enable him to see things in their true light.

Effects of Live and Dead Loads.

Physics teaches that a pound of feathers weighs just as much as a pound of lead, although the average man still is apt to have moments when he questions the ponderosity of these substances. That there is a more subtle difference between hauling a ton of feathers and a ton of lead on a motor truck than that involved in the mere bulk of the commodities, however, is a point that is likely to escape one who has not had a practical demonstration of the point involved. Said a motor truck manufacturer:

"If you had two trucks of the same construction making equal trips over the same route and carrying equal loads, one of wool and the other of iron, which would wear out its tires faster? The one that carries the iron, of course. And the reason is that iron is inelastic, relatively speaking, while wool possesses a considerable amount of resilience. Hence wool, or any other 'live' load, causes much less rapid depreciation in the tires, and in the entire mechanism of the vehicle for that matter, than does a load which is absolutely inert."

A certain resemblance may be traced between the effect on the mechanism of the car of hauling live and dead loads and of running on pneumatic and solid tires. The difference is that between a positive shock and a cushioned blow. Hence it must follow that for the handling of dead loads, particularly very heavy loads, either the truck must be built more solidly than would be necessary were it to carry only loads

of more elastic nature, or else its depreciation will be considerably higher. Here is a point for both the builders and users of motor trucks to ponder very seriously.

Motor truck designers are just beginning to comprehend that it is not sufficient to make commercial vehicle parts a great deal more substantial than would be required for pleasure cars of corresponding size, but that in some instances even the arrangement of parts that has proved satisfactory in the lighter form of vehicle will not suffice in the heavier. This is seen in the use of radius rods to determine the position of the front axle, in new methods of frame bracing, in the mounting of control mechanisms, and most of all in spring suspensions. Commercial vehicle design, like that of the pleasure car, must proceed quite as much on an empirical as a scientific basis, and the process of evolution by no means has reached its final state.

One direction in which the development of the future must proceed is that of correlation between the structure and the service it is intended to perform. It is not necessary to abandon standardization, but it must be understood that no such unification of design is possible with trucks designed for various duties as has proved successful with pleasure cars; it is not enough merely to strengthen the springs when a heavier load is to be hauled.

Happily the feather-and-lead distinction is now pretty well understood by truck builders of the more responsible order, but in the education of the user a great deal remains to be accomplished. So long as eager, uninformed and unscrupulous makers and dealers are able to gain the attention of possible customers who do not know their own requirements, motor haulage experiments will sometimes turn out badly. The present great necessity is for close co-operation between manufacturer and customer, and for the study of each "prospect" as an individual problem; either that or a growth of specialization in building vehicles for limited service.

Wherein the Tail Light Offends.

All things considered it is a little surprising that the ordinary form of tail lamp has been permitted to survive as long as it has. Certainly the time would seem to be ripe for the general adoption of a more suitable pattern. The fault lies both in the form of the lamp itself and in its attach-

ment to the car. For the ordinary bracket by no means is blameless, while the lack of standardization in its mounting is an abomination.

For example, of a recent evening the tail lamp of a New York taxicab was observed to jump off and fall to the road, the fount being broken and the oil igniting. The driver had no means of knowing of his loss, and the damaged lantern was left to burn itself out in a merry blaze right in the middle of a busy thoroughfare. Nor is such an accident by any means as rare as it should be. Indeed, lamps may be lost or "lifted" from the ordinary bracket so readily that in some instances chauffeurs make it a practice to carry the lamp in the fore part of the car during the day, replacing it when lighting up time comes.

The real evil, however, is in the unsatisfactory illumination of the number plate, and in the lack of standardization in the position of both the plate and the lamp. With the success of present lighting systems, both electric and gas, the design of the lamp whether independently or in combination with a number pad or transparency presents little difficulty. Of course the fragile transparency is out of the question, as in practically all states there is an official and metal number plate required. It is really a matter of mounting and external illumination. A number of excellent designs are on the market, in fact. The remarkable thing is that they are not in more general use.

"After consultation with the chairman of the club's legal committee," the secretary of the Automobile Club of America opened his mouth one day last week to declaim against the Federal registration bill and to express sympathy for the Frelinghuysen effort to keep New Jersey a "closed" state. The inopportune and uncalled for expression of opinion has aroused resentment and caused wonder as to what manner of man the secretary may be; but there is no reason for it. He is more to be pitied than censured. The voice may appear to be his voice, but the words are the words of some one else. He merely is acting the part of a "goat." The secretary of the A. C. A. is a paid employe and in that chilling and occasionally American institution no employe would dare wag his tongue or call his soul his own unless he was instructed to do so.

COMING EVENTS

March 4-11, San Francisco, Cal.—San Francisco Motor Club's show in Dreamland and Pavilion rinks.

March 4-11, Boston, Mass.—Boston Automobile Dealers' Association's annual show in Mechanics building and Horticultural Hall.

March 6-11, Dayton, Ohio—Dayton Automobile Club's show in Memorial building.

March 6-11, Houston, Tex.—Houston Automobile Dealers' Association's endurance run to San Antonio via Austin, and return.

March 7-11, Des Moines, Ia.—Third annual show of Des Moines Automobile Dealers' Association at the Coliseum.

March 11-18, Cleveland, O.—Manufacturers and Dealers' Association's show in Central Armory.

March 14-18, Denver, Col.—Annual Show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 15-18, Louisville, Ky.—Louisville Automobile Dealers' Association's annual show in First Regiment Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

March 18-25, Montreal, Canada—Automobile and Aero Club of Canada's show in Drill Hall.

March 20-25, Youngstown, O.—Youngstown Automobile Club's show in Auditorium rink.

March 20-25, Wilkes-Barre, Pa.—Wilkes-Barre Automobile Club's show.

March 20-26, Quincy, Mo.—Show at Highland Park.

March 22-25, Watertown, N. Y.—Watertown Dealers and Manufacturers' Association's second annual show in armory.

March 25-April 1, Pittsburg, Pa.—Pittsburg Automobile Dealers' Association's fifth annual show in Duquesne Garden.

March 27-30, Jacksonville, Fla.—Racemeet on Atlantic-Pablo Beach.

April 1-8, Montreal, Can.—Annual show in Coliseum.

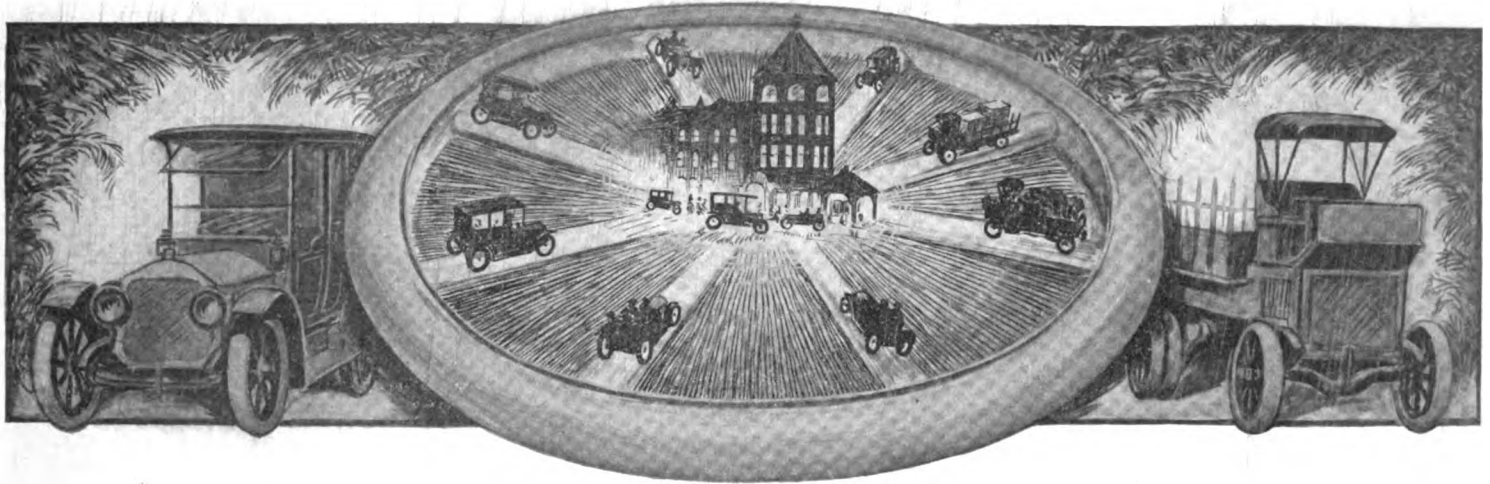
April 8-9, Los Angeles, Cal.—Twenty-four hours race on Los Angeles motor-drome.

April 15, New York City—Motor Truck Club's commercial vehicle parade.

April 22, Redlands, Cal.—Annual hill climb from Redlands to Oak Glen.

July 2, Le Mans, France—International road race for the French Grand Prix.

September 9, Bologna, Italy—International road race for the Italian Grand Prix over the Bologna circuit.



Boston Show Does Not Lack Novelty

It Holds Twelve Brands of Pleasure Cars and Six Trucks that Were Not Exhibited at Other Shows and a Wealth of New Accessories—Decorative Scheme Proves Eye-Pleasing, as Usual.

It goes without saying that the Boston show, which opened on Saturday evening last, 4th inst., and which still holds the boards, is an eye-pleasing one. It was Boston that originated the plan of uniform decorations, and since the idea first was put into practice each succeeding show has not failed to please; and each year the wonder grows that so much can be done with so little.

The thrift of New England never was better demonstrated than by the manner in which the Bostonese are able to provide such a handsome show at such small cost. Of course, the decoration is not such as will withstand hypercriticism. The decorators have their expense limitations, and the fact that bare beams and bare walls are to be seen above or below the dressing may harshly jar the too sensitive eye, but for all that, and for the average mortal, the general attractiveness is too great to be denied.

This year the evidence of thrift and of expert handling of commonplace materials is as much in evidence as heretofore. Stained wood, bunting, "marbleized" cardboard, red wall paper and greenery of various sorts have been put to such artistic use as to command admiration and to increase the regard for the ingenuity that renders it possible to achieve such triumphs.

Immediately on entering Mechanics' Building, in which all save the overflow of exhibits is staged, there is apparent only a small suggestion of the beauty that is within. On the ceiling overhead there is green lattice work, studded with red and

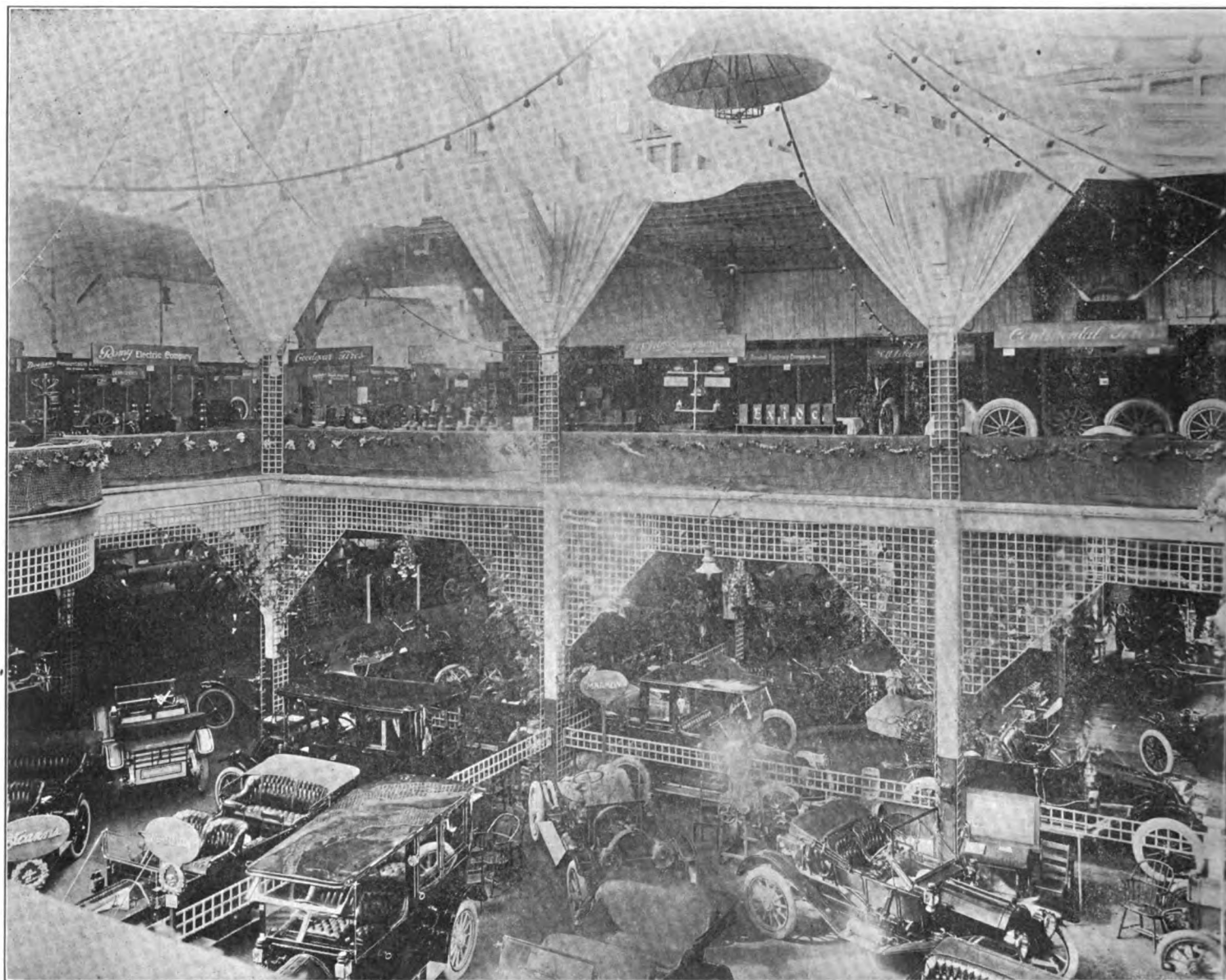
green lights, but there is not enough of such decoration as to inspire remark. In Exhibition Hall, however, the eye receives its first treat. The numerous beams and supports which it contains are half hidden by green lattice, on which is plentifully trailed Australian maidenhair fern. Boston always makes good use of greenery, and last year it promoted botanical research by widely heralding its use of *Spirea Van Houtii*. This year the Australian maidenhair fern was given botanical pride of place in the decorative description, but no promise was given that this fern would defy such plant-life by being in blossom, for, be it known, the ferns which trail the lattice are in flower. They are "bearing" white, pink and purple blossoms—for the occasion only, of course. The whitewashed beams and rafters show through the lattice work, but from a distance the effect is not short of beautiful, and the effect is heightened by bunches of electric flowers of varied hue which are pendant from the ceiling. The walls, or, at any rate, the lower halves of them, are concealed by sky-blue bunting, on which are displayed the "art works" of the press agent's imagination; they are contained in gilded frames. They portray road scenes in India, in Austria, in Morocco, in the Philippines, in Cuba, in America—in fact, in half the countries of the earth—but the paintings are in no danger of being bought or stolen by a frenzied connoisseur.

Cars occupy all of the ground floor of Exhibition Hall. There are other cars and many trucks, and also a few accessories and candy and lemonade stands in the

basement, where the upper halves of the supports are set off by pink and white bunting, the lower halves being surrounded by green frames, and filled in with Persian wall paper. There are "landscapes" on the walls—the painted landscapes that come by the yard and that can be packed in camphor when they are taken down.

The balcony of Exhibition Hall is given over to sundries. There is not much room there for decoration. The walls are partly concealed by panels of heavy red wall paper placed above a strip of green burlap—it is mild embellishment, but it helps. One of the two women's orchestras is stationed in the balcony, and the girls add something to the scene, even when they are not making sweet music.

From Exhibition Hall to Grand Hall is but a step. One walks from one to the other, almost without knowing it. The effect, however, is wholly different and even more pleasing. As its designation suggests, Grand Hall really is the "show place" of Mechanics' Building, and never was it shown to better advantage than on the present occasion. There is a "sky" of light blue bunting, from which are pendant not only electroliers, but flowering baskets in which the blossoms themselves are illuminated from within. The railing of the gallery, with its ample seating capacity—not to mention the accessory exhibits—where the Bostonese love to seat themselves and linger long while listening to the music of the white-robed women's orchestra, is artfully concealed by marbleized cardboard set off by a festoon of greenery. It is from the gallery that the



SEMI-GENERAL VIEW OF FLOOR AND GALLERY IN EXHIBITION HALL

best view of the ground floor is obtained, the striking features of which are the 30 great fluted columns, 25 feet high, and simulating marble, of course. Those marking the main aisle being topped with golden eagles; the others are topped by Scammozzi capitols, which probably conveys much to those familiar with Senor Scammozzi's work. As a matter of prosaic fact, however, the capitols suggest merely a cap piece with six or eight great outstretched arms, on which are laid palm leaves sprinkled with flowers. All of the columns are connected with strings of electric bulbs, and each is twined with illuminated roses.

The walls of the floor space and the gallery spaces are hidden by panels of the red wall paper used in Exhibition Hall. The signs indicating each exhibit are of wood and oval shaped, on which is painted the name of the car. On the same standard, and beneath the wood sign, there is a golden wreath, within which is the card bearing the exhibitor's name and address.

The Boston people enjoy their show each year. A goodly number enjoy it throughout the whole week, but the most enjoyment comes to a large number on the opening night. They go that night and they return no more. They go almost wholly because they have obtained "passes." "Paper night" at all shows holds peculiar interest. The "complimentaries" have a way of filtering into unexpected hands, and by far the largest part of the crowd is made up of young people whose looks suggest that, though familiar with the cry "Cash!" the purchase of a gallon of gasolene would cause the collapse of their pocketbooks. This element is very numerous at Boston's first night, and it usually brings the whole family, and at least one of the family brings a Boston bag or other receptacle in which to carry catalogs home; for catalogs are as useful for starting kitchen fires as for anything else. The members of the family glance at the cars, of course, but it is the music of the band that enrapt

them. When one of the lady musickers plays a solo or a sohig that part of the crowd—which has not been able to find seats—halts in its track, and listens, almost open-mouthed. In previous years the Boston show management provided vocalists to lift up their voices in song, but this year the sweet singers of old are missing, and instrumental solos by individual members of the two women's orchestras fill the unaching void. On Saturday night the whole "complimentary" crowd stopped dead the moment the instrumentalist blew her first blast, and in a few moments the congestion was fearful. It was impossible to move in any direction, but one of Boston's cultured policemen arose to the occasion. Did he shout, "Move on, there!" or "Step lively?" Not much! In a voice strengthened by beans and codfish he again and again cried out with great deliberation:

"Don't un-nec-essarily crowd the aisles. Please keep the passageway open."

They do some things better in Boston.



LOOKING DOWN THE CENTRAL AISLE IN GRAND HALL, SHOWING WHITE AND WINTON EXHIBITS

It goes without saying, too, that the Boston show is a big show. Though nominally rated as a local show, it is so large and draws such a liberal assortment of products that it is sometimes referred to as the New England show, and it is not wholly undeserving of the title. Certainly, when it comes to the quality of the show as an exhibition there is no taint of provincialism about it; it affords a good demonstration of about all the variety that the established industry can muster, and is representative of practically all the well-known makers.

That the attraction of New England is sufficient invariably to draw out a handful of manufacturers who have not exhibited at the previous national shows is a circumstance that adds new zest to the display in the eyes of the chronic showgoer, just as a few new "specialties" serve to liven up a histrionic production that has been on the road for some time. Another point in its favor is that, while it is made up in good measure of the more striking "set

pieces" of the other shows, it also discloses a good proportion of novelty in the way of body designs and finishes that have not been seen before.

No Boston show would be complete, it must seem, unless the White, Alco, Stoddard-Dayton, Winton, Pierce-Arrow, Knox and Stevens-Duryea cars occupied prominent stands in Grand Hall. Ranged under the balcony this year are such products as those of the Studebaker group—the Studebaker, E-M-F and Flanders—and the Overland, Kissell, Mitchell, Premier, Pullman, Pope-Hartford, Brush and Waverley and Detroit electrics.

In Exhibition Hall, which is the name of the bepillared, flatiron-shaped area that occupies the remainder of the ground floor, many of the old standbys likewise retain their former positions. On the main aisle, for example, the Rambler, Chalmers, Marmon, Stearns, Columbia, Locomobile, Reo and Ford products are arrayed, while the Maxwell, Franklin, Haynes, Inter-State,

Schacht, Bergdoll, Cole, Selden and Moline are among others that are prominently located.

The basement is given over mainly to displays of commercial vehicles, with accessory trimmings ranged around the walls. At the same time such cars as the Empire, Auburn, Henry, Hupmobile, Warren-Detroit, Cunningham, Jackson and Palmer-Singer also are to be found in the below-stairs region. Among the truck displays that are more conspicuous are the Knox, Garford, Buffalo, Franklin, Kelly, Cass, White, Pierce-Arrow, Overland, Autocar and Morgan. There are also the Dayton, which is new to Boston, indeed, having only just made its bow to the public, so to speak, at the recent Chicago show, not to mention the big Sampson and the little Brush, which form a sort of Lion and Lamb combination in one of the many corners which the cavernous sub-show fills.

In respect to trucks, it may be observed, Boston has done herself proud, as usual.

Last year, it may be remembered, the display of commercial vehicles totaled 62 complete machines, as against 40 the previous year and 57 in the only exclusively commercial vehicle show ever held—that of December, 1907, in Chicago. This year, with two special exhibitions devoted to business vehicles preceding it—one in New York and one in Chicago—Boston makes a notable showing in the totals, having 95 complete cars, as compared with 89 in New York and 149 in Chicago. In justice to the two other shows, however, it might be urged that the total number of exhibitors of distinct products was greater in one or both cases. At all events, it is certain that were each of the displays confined to one or two cars and a chassis, the total would dwindle surprisingly.

As it is, one maker is represented by 11 complete vehicles and two chassis, another by seven complete vehicles and seven chassis, while several displays are made up of a half-dozen vehicles. The effect is all the more striking for the reason that nearly all of the trucks bear the signs of their present or prospective owners, to whom they will be delivered immediately after the close of the show, while several are laden with the products which they are to carry in actual service. The result is that a very practical touch is added to this portion of the display, the only drawback to which is that it has, to a degree, been split up by the exigencies of the overflow.

Horticultural Hall, which is several blocks removed from Mechanics' Building, and in which the overflow is staged, is characterized by small decorative effort, American flags and potted plants being the only evidence of decoration. But, as the building is divided into a suite of four rooms on two floor levels, a sort of cosy corner effect is attained, and the display of cars and the handful of accessories that have been crowded out of Mechanics' Hall thereby are rendered not unattractive, despite the paucity of special embellishment. The only real objection to the arrangement is that only a small allotment of exhibits from each of the departments of the main show has been allowed to overflow, with the result that the display is limited in respect to each class and somewhat disappointing as a first impression. Perhaps the effect would have been more satisfactory had it been possible to confine the overflow to a single class of exhibitors.

Considered individually, however, the Horticultural Hall part of the show is well worth attending, even though the yellow "transfer" system in vogue does not permit of indefinite circulation between the two buildings. That most of the cars on view are either new or are being exhibited for the first time this year makes it all the more important for the critical visitor not to miss the supplementary display. In addition to a number of commercial vehicles

CENSUS OF THE SHOW.

Total Exhibitors	263
Exhibitors of Cars	90
Exhibitors of Accessories	173

PLEASURE CARS.

Gasolene:	
One Cylinder	2
Two Cylinder	2
Two Cylinder (2 cycle)...	1
Four Cylinder	211
Four Cylinder (2 cycle)...	4
Six Cylinder	45
Steam	6
Electric	6

Total Pleasure Cars..... 277

Touring (closed)	118
Touring (open)	52
Runabout	18
Roadster	45
Coupe	7
Limousine	27
Landulet	3
Racing Type	6
Victoria	1

277

Two Cycle	5
Four Cycle	260

Air Cooled Cars.....	4
Water Cooled Cars.....	261

CHASSIS.

Two Cylinder (2 cycle) .	1
Four Cylinder	36
Four Cylinder (2 cycle)....	1
Six Cylinder	8

46

COMMERCIAL VEHICLES.

Gasolene:	
One Cylinder	2
Two Cylinder	22
Two Cylinder (2 cycle)...	2
Three Cylinder (2 cycle)...	4
Four Cylinder	52
Four Cylinder (2 cycle)...	3

Total Gasolene Com'l Vehicles..	85
Electric Vehicles	5

PUBLIC SERVICE VEHICLES.

Gasolene	5
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CHASSIS.

Gasolene:	
Two Cylinder	2
Two Cylinder (2 cycle) ..	1
Four Cylinder	12
Four Cylinder (2 cycle)...	1
Electric	1

Total Chassis.....	17
Air Cooled Vehicles.....	11
Water Cooled Vehicles.....	79
Total all Vehicles.....	372

there are the Carhartt, Cutting, Abbott-Detroit, Chadwick, Cartercar and Oakland cars. The chief interest, of the sort that is provoked by curiosity, however, naturally centers about the newcomers, namely, the Imperial, Whiting, Lenox, Herreshoff, Havers, Welch and Croxton, and the Decatur and Harder trucks, the latter of which is shown for the first time in the East, though it is not making its debut, that honor having befallen it in Chicago.

Despite recent newspaper reports to the effect that one of the Welch products was about to be discontinued, both appear in Horticultural Hall in the form of new models. The Welch-Pontiac in particular, which is a development of the original Welch car, is strikingly different from its immediate predecessors, and one of the most striking and elaborate cars in the entire show. It is equipped with what is termed a "Gentleman's Limousine," which is to say that there is no dividing partition between the front and rear seating compartments, the machine being intended for the use of driver-owners. Its most noteworthy feature is the construction of the coachwork, which is so designed that the top can be demounted, leaving a neat and modish straight-line closed-front touring body for warm-weather use. The car also is dignified by a motor-starting device which is original and rather impressively simple.

The starting system is designed for acetylene gas, and operates under the regular pressure of the standard gas tank. On the side of each of the cylinders is mounted a small injector attachment and valve, the attachments being piped to the gas tank directly, while the flow of gas is controlled by a pedal on the foot board which actuates the individual valves on all the cylinders simultaneously. Each of the valves consists of a small nozzle within an enlarged and perforated body, the perforations being of such combined area that when the valve is opened the inflowing gas will draw into the cylinder enough air to form an explosive mixture. Depressing the starting pedal once serves to charge all of the cylinders, while the operation of the starting button of the dual ignition system serves to ignite the charge in the proper cylinder.

The motor, which, like the entire chassis, is of new design, is a huge and radical adaptation of the block casting plan. The cylinders, which measure $5\frac{1}{2} \times 6$ inches, bore and stroke, are paired, to afford ample room for a center crank shaft bearing, but the forward and rear pairs are connected by a web or truss, which is cored out to permit of water circulation, and which extends from the cylinder heads to a point just below the bottom of the jackets. The valves are mounted in the heads at the incline, and are actuated by rocker arms, pivoted in the center of the heads, from

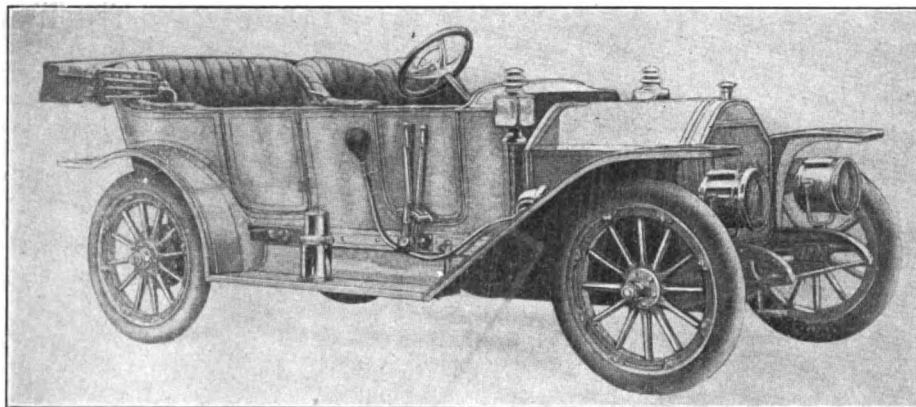
independent cam shafts. Instead of the individual clutch change gear system, which was a former Welch standby, a selective sliding gearset is employed, while, to afford easy access for the driver on the right side of the machine, the emergency brake lever is eliminated, one set of brakes being actuated by an independent pedal, while the other is put into action by the depression of the clutch pedal to its full throw. The Welch-Detroit product, which

of the latter from the effects of long-continued stress and working, they are bushed, the bushings being extended beyond the springs sufficiently to secure a bearing in the spring hangers. The bolts thus are relieved of all strain except that necessary to compress the bracket.

The horsepower rating is $27\frac{1}{4}$ by the deceptive A. L. A. M. formula, the clutch of the leather-faced cone type and the gearset selective in construction. The

with a view to the admittedly large market for a sextuple engine car at a relatively low price. With its large and well-designed body, the roadster model shown looks particularly attractive at \$1,500, its round fuel tank, long, sweeping guards, large hood and ample seating, looking the part of a much more elaborate type of machine. It also is built in the form of a five passenger touring car that sells for \$1,650.

The motor employed is of $3\frac{3}{4} \times 3\frac{3}{4}$ inches cylinder dimensions, and is rated at 34 horsepower. The valves are mounted on one side and operated from a single shaft, which is forged with the cams integral. The master clutch is of the inverted cone type, fitted with a special leather facing material, and driving to a three-speed selective change gear, the method of mounting being such as to secure the effect of a unit plant. Final drive is through a single universal joint enclosed in a torsion tube with semi-floating rear axle mounted in a combination of roller and ball bearings. The wheel is 115 inches and the standard tire equipment is $36 \times 3\frac{1}{2}$ inches.



THE LENOX TOURING CAR WHICH SELLS FOR \$1,800

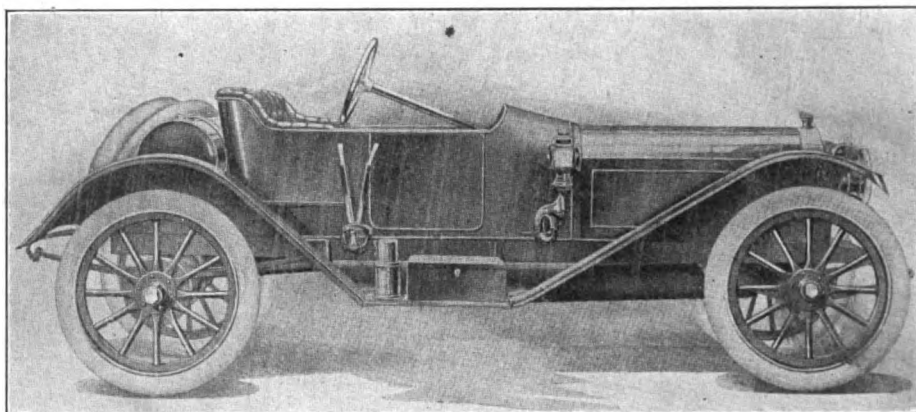
is of more conventional design, is shown in closed-front touring and limousine forms.

One of the cars that are making their debut at the show is the Lenox, which is made and exhibited by the Lenox Motor Car Co., of Boston. The company has been in existence only long enough to have produced a very few cars, but is well equipped with the ripened experience of its individual members, among whom are Albert A. Martell, formerly with the Packard company, and Chester T. Bates, who designed the Morse car. The product belongs to that growing class that is termed the "Lancia" type, having a long-stroke motor ($4\frac{1}{2} \times 5\frac{1}{4}$ inches), shaft drive and other approved features. In point of design it has no particular claim to individual distinction, although a number of its details have been worked out with considerable care and ingenuity.

The transmission system is of the axle-mounted type, for example, the torsion tube being supported by the usual ball and socket joint surrounding the universal joint in the driving shaft. The joint is heavily constructed and rigidly attached to a cross-frame member, the stationary member being made in two parts and bolted together with shims between the parts to allow for subsequent adjustment. The interior of the socket is cored out and filled with babbit metal, which provides a smooth working joint and one that can be kept tight at small expense. The torque tube and shaft being provided with slip joints, the traction load is taken up by the forward ends of the rear springs. To relieve the bolts which pass through the eyes

changes in the latter are secured by sliding only one gear for the low speed forward and reverse and another for the second and high speeds. The brakes are located on the rear axle, and have 14-inch drums with two-inch face, the pull rods being mounted inside the frame. The car is sold fully equipped, including top, windshield and speedometer, in addition to complete

While it cannot be considered exactly a new car, the S. G. V., which is made by the Acme Motor Car Co., has not before been exhibited at one of the larger shows. It is being shown by the Boston Motor Co., the local agent. Embodying frank appropriations of a number of ideas that have been used successfully in foreign practice, it nevertheless reveals not a little that is strikingly original. Owing to the proportions of its cylinders, the motor is rated at



THE HAVERS SIX TWO-PASSENGER \$1,500 ROADSTER

lighting outfit, and is built with either five-passenger closed-front touring or two-passenger roadster bodies.

Coming without previous announcement, the Havers Six is one of the several disclosures of like nature which the show affords. It is made in Port Huron, Mich., by the Havers Motor Car Co., a comparatively new company with a brand new product that is just being launched on the market. The car, as its name suggests, is of six-cylinder construction, and is built

only $22\frac{1}{2}$ horsepower, but the dimensions of $3\frac{3}{4} \times 4\frac{3}{8}$ would seem to indicate an actual development in excess of that output.

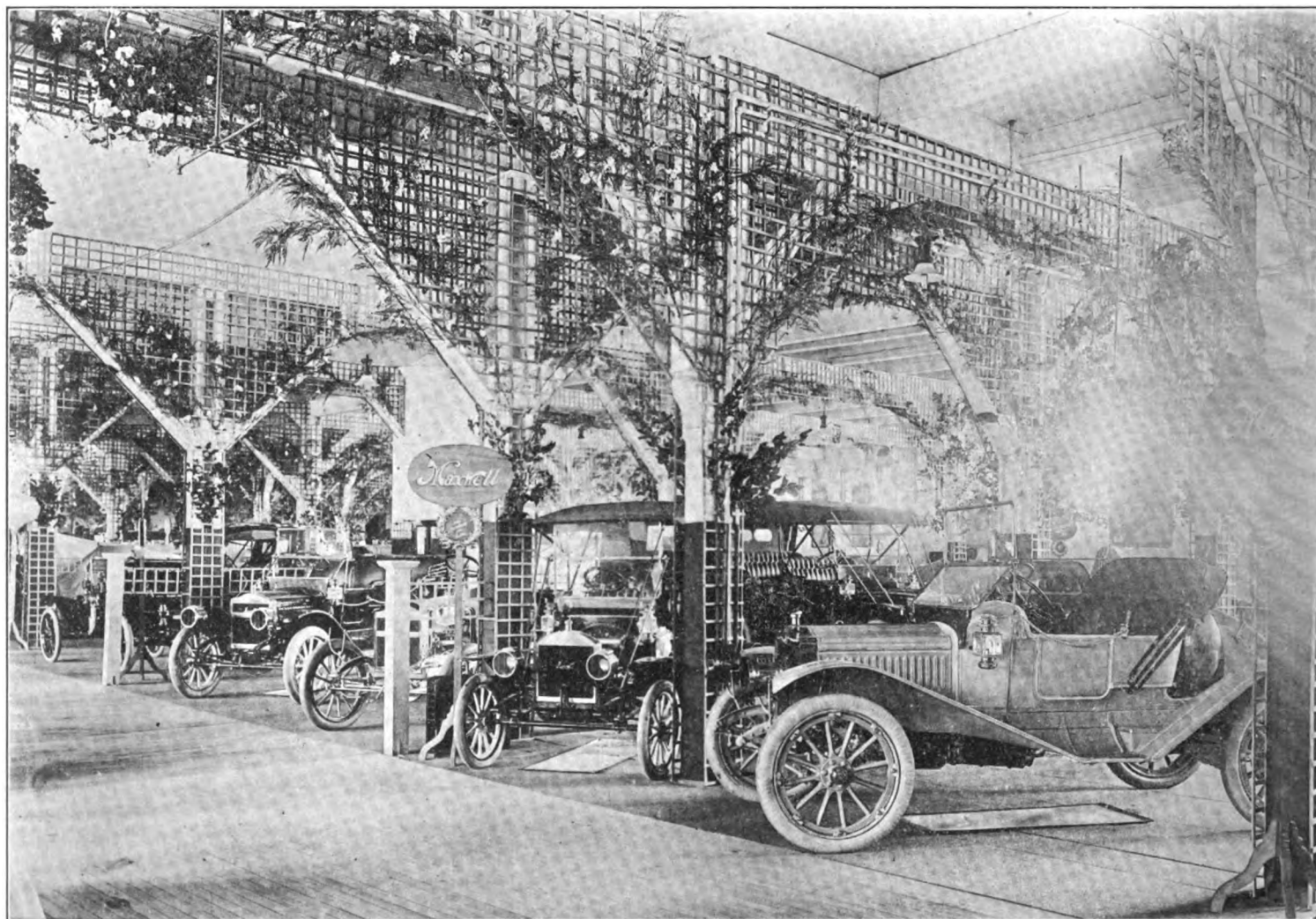
Of the block type, the valves and magneto being placed on the left, the engine is notably compact. The carburetter is of the strangling type, built with a long vertical intake pipe between the jet and the throttle and having but one moving part, which is the throttle itself. For ease in starting an auxiliary jet is fitted, which delivers an over-rich gas through a small diameter pipe passing around the throttle.

The engine bed casting is extended to the rear of the motor proper to form a support for the gear box, the effect secured being that of the unit power plant. The gearset, which is selectively operated, is arranged with much lower gear ratios than commonly are employed, this being made possible by the high speed capabilities of the motor, which are said to enable it to

and an accelerator pedal which is interconnected with it.

Rejoicing in no less than 15 years' experience in automobile building, the Grout Automobile Co., which is exhibiting its own product at the show, is marketing this year a car differing but little from that of last year, and embodying few, if any, radi-

plant by the mounting of the active members on a sub-frame. The latter also carries the steering gear, leaving the main frame members unusually free from attachments. Leather-faced cone clutch and three-speed selective gearset are employed on both chassis. In the 45 model, however, a torsion bar and double-jointed propeller shaft are used, while in the smaller model



MAXWELL EXHIBIT AND CLOSE RANGE VIEW OF LATTICE DECORATION IN EXHIBITION HALL

be operated smoothly between the limits of 250 and 2,500 revolutions per minute. The construction of the propeller shaft, the long, pressed steel torque bar and the rear axle corresponds in point of evident stability with the remainder of the car to a notable degree.

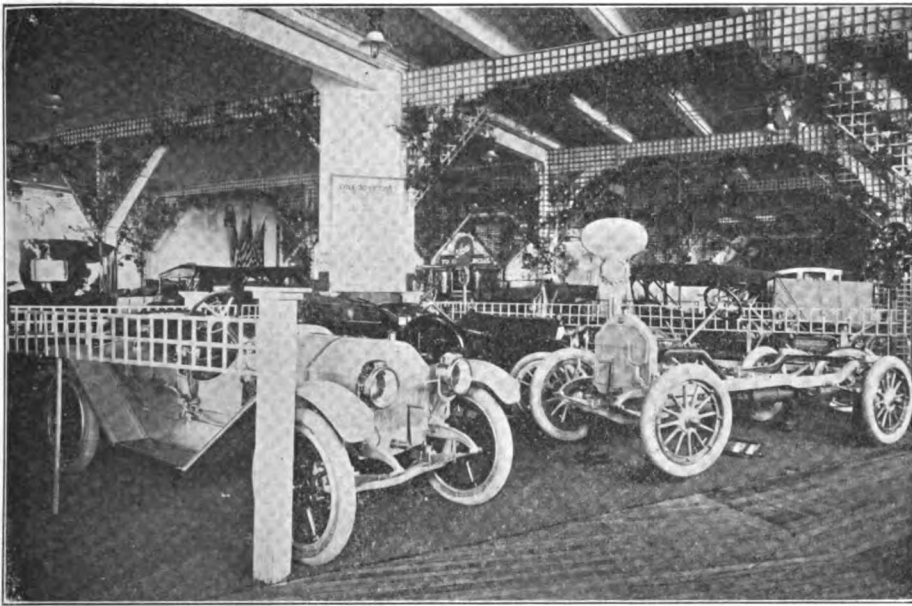
As displayed in touring form, the machine gives the impression of being exceedingly low. Its road clearance, nevertheless, is nearly 10 inches, the 5 inch drop in the rear of the frame, low running boards and enclosed guards contributing to the effect. One of the car's distinctive points is the use of set spark ignition. In consequence of this the mechanism of control is reduced to a rotating throttle mounted on one of the spokes of the steering wheel

cal points. Model 45, which was last year's chief feature, indeed, is hardly distinguishable from its predecessor, despite the fact that its transmission now is made at the Grout plant. A new element in the line, however, is the model 35, which is a new and reduced edition of the 45 model, practically speaking. This particular model is equipped with a motor of Grout construction, that of the larger car being a Rubenber. Save in the matter of dimensions, however, the two engines are very much alike. The new one is of $4\frac{1}{2} \times 5$ inches bore and stroke, while the larger engine has $4\frac{3}{4} \times 5$ inch cylinders.

By the Grout plan of construction the main frame members are relieved of all strains due to the working of the power

an enclosing torque tube surrounds the single-jointed shaft. Model 45E, as it is called, is a neatly designed example of the closed-front pattern of touring car. The smaller model, however, is of the standard type of touring vehicle.

Not only is the Stanley steam car one of the old stand-bys in the steam field, but it also is one of the oldest machines on the market, the present show, in fact, marking its fourteenth year of existence. Furthermore, as becomes a pioneer, it is not distinguished for material changes from year to year. In building the models now on view, however, one or two alterations have been made which are worth mentioning. Of such is the lowering of the body $2\frac{1}{4}$



COLE CARS CONSPICUOUS IN EXHIBITION HALL

inches on the new 10 horsepower model, due to the use of 32 inch tires instead of 34 inch equipment, and also to a redesign of the steering knuckles. In addition to these alterations the sizes of all parts have been increased sufficiently to secure added reliability in service.

As heretofore, the power plant consists of a small tubular boiler supplying steam to a two-cylinder simple engine of the plain slide-valve type. Within the past year, however, the use of copper tubes, instead of steel, has been adopted for the boiler, the construction of that part otherwise remaining as before. The shell is pressed in one piece, including the lower tube-sheet. The upper tube-sheet is assembled by a special application of the autogenous welding process. One of the detailed improvements applying to both the 10 and 20 horsepower models, which form the basis of the line, is in the water-level indicator. As before, this device is indirect in action, the actual indication being afforded by a column of cold water rising in an open-ended tube. Some alteration in the arrangement of the system, however, has tended to render its action a little more certain and reliable.

While it has figured more or less extensively in the Middle West for the past two years, the Imperial, which is manufactured by the Imperial Automobile Co., of Jackson, Mich., has remained but little known in the East up to this time. For the purpose of demonstrating its construction, however, the maker has imported three of the ten models which comprise the full line. The cars shown are the model 50, closed-front touring car, seating five passengers, having a $4\frac{3}{4} \times 5\frac{1}{4}$ motor; the model 43, which is an exceptionally neat-looking example of the gentleman's roadster class, which is finished in "Im-

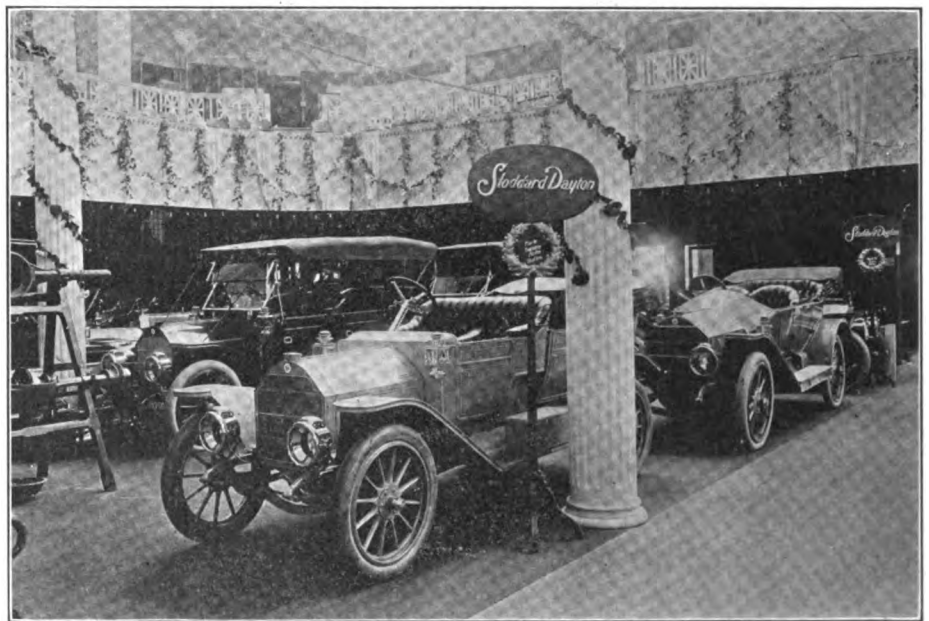
perial" brown, and a model 30 touring car, which is a somewhat less ostentatious touring car of standard lines, which is equipped with a $4\frac{1}{4} \times 4\frac{1}{2}$ -inch engine.

As far as dimensional limits will permit, the cars are all of similar construction. The power plant employed is of the unit type, combining a four-cylinder, vertical motor, enclosed, leather-faced cone clutch and three-speed selective gearset. Three sizes of engine are employed, while in models 42, 43 and 44 a multiple disk clutch is used instead of the plain cone type. The models designated also are equipped with semi-elliptic front springs and three-quarter elliptic rear, all joints being fitted with grease cups, while the other models, with the exception of the 30, are mounted on full elliptic suspensions. The last named has a semi-elliptic front and full-elliptic

rear mounting. All models are equipped with Remy magneto and dry battery dual ignition, and all have thermo-syphon cooling with unusually small diameter pipe leads from the cylinders to and from the radiator. The advantage of this, it is explained, is that it tends to accelerate the flow of the water, thereby insuring its prompt delivery to the radiator and equally prompt cooling, instead of permitting it to lag in large and useless pipe areas.

The power units are mounted on three points, one on either side of the fly wheel and clutch housing and the third in front, where an arched supporting member which crosses over the housing of the timing gears is attached to the crank case by means of a flexible joint. One feature of the motor construction to which particular attention is called is the method of enclosing the valves. Instead of individual screw caps over each of the valves, which are placed side by side, each of the two twin cylinder castings is fitted with a cover plate over the entire valve chest. The plates are secured by three bolts, and when removed afford ready access to the valve pockets and cylinder interiors, either for ordinary repairs or for cleaning purposes.

Herreshoff cars are made in Detroit, but ready appreciation of their merits was found in Boston when they first were introduced several years ago, and they are invariably exhibited to New England showgoers, even at times when those who visit the New York and Chicago shows are not permitted to inspect them. The line is graced by a pleasing addition this year in the shape of model 25, as it is called, which is entirely new, and which differs from model 30 in several points, but most notably in having a block motor of $3\frac{3}{4} \times 3\frac{3}{4}$ inches cylinder dimensions and left-hand drive. The new car is of characteristically

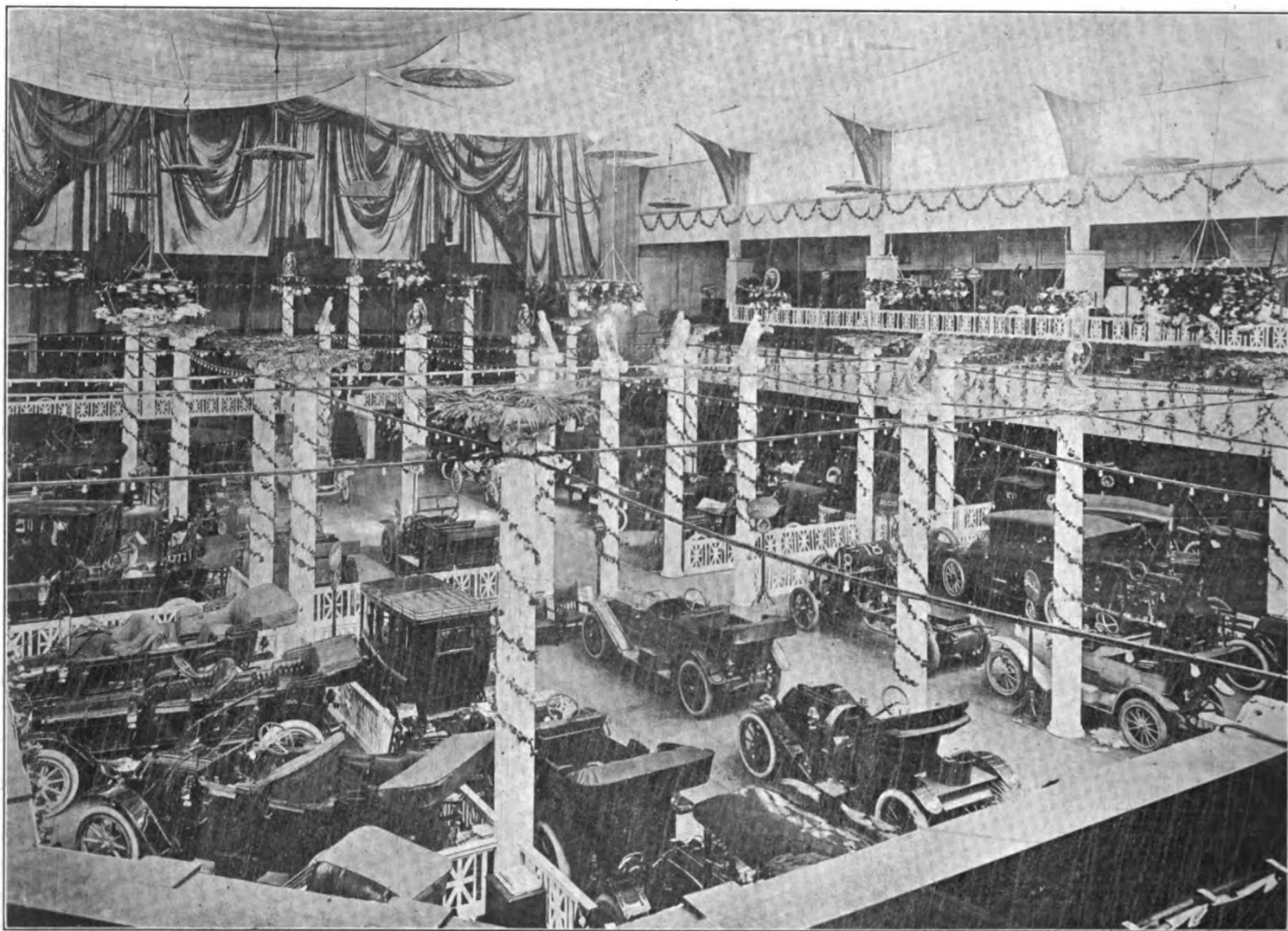


WHERE THE STODDARD-DAYTON PRODUCTS ARE STAGED

neat appearance, and, with its nearly flat semi-elliptic springs, "kicked-up" frame and 32x3 inch tires, is of the popular, low-hung variety. The brakes are pedal controlled, and the single selective gear shift lever is placed in the center of the footboard so that easy access may be had from either side. The car is built in both runabout and three-passenger roadster types, the latter, which is the one on view in Hor-

ing collar in front. The assembly is completely enclosed within the gearbox.

Among other cars that are being exhibited for the first time during the present season at one of the large shows, the Empire 20 must be considered almost a new product, for its design has been altered conspicuously since its advent during the last show season. The engine is of $3\frac{1}{2} \times 4$



BIRDSEYE VIEW OF THE DECORATIONS AND EXHIBITS IN GRAND HALL

ticultural Hall, being of shapely pattern and having rather high doors to the front seat.

Model 30, which has an engine with cylinders cast in pairs, that is capable of developing 35 horsepower, by the way, is an improved type of the preceding line, built with low and roomy closed front, five-passenger touring body to neat lines. A well-set limousine also is shown. Points of similarity between both chassis types and their equipments are found in the use of three-speed selective gearsets, shaft drive with torsion tube construction, Bosch high-tension magneto ignition and multiple disk clutches.

top and windshield equipment. Among its features are a neat form of unit power plant, with magneto ignition and thermosyphon cooling, two-speed selective change gear, cone clutch, and a shaft drive with solid torque tube connection to the rear axle.

The flywheel being mounted at the front end of the motor, the clutch is reduced to economical proportions. It is of the inverted cone pattern with an unusually wide face and liberal bearing surfaces to insure alignment. With this in view, the central boss has been extended rearwardly, incidentally forming a sleeve for the clutch spring, which bears against a thrust bear-

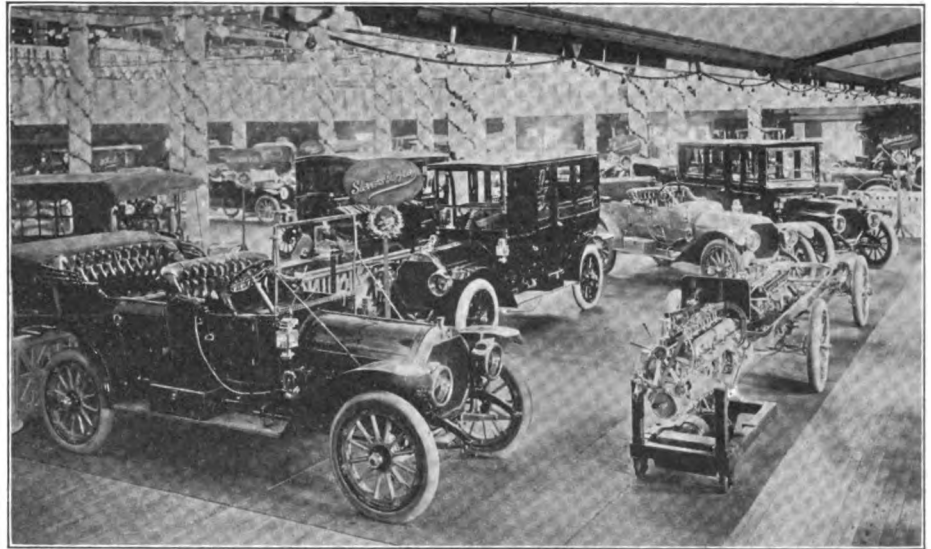
inch cylinder dimensions, and of T-head form, cast en bloc. It is suspended on three points on the main frame by means of a special hanger member which surrounds the rear of the crank case casting and a trunnion bearing in front, which furnishes the third point of support. The housing, which encloses the friction-fabric-faced cone clutch, is extended to the forward side of the universal joint in the propeller shaft and forms a support for the front end of the torsion tube. The gearset, it is almost needless to add, is mounted integrally with the rear axle. Semi-elliptic springs in front and three-quarter elliptic members in the rear are a new feature in

the current model, as is the use of shaft drive.

Model C, as it is known, is built both as a runabout and an inside-driven coupe of unusually liberal interior proportions. The latter, in addition to an ample amount of window area, has double doors and a wide and comfortable seat. The two styles of body are interchangeable, and they are offered together with one chassis at a combination price of \$1,250, which is decidedly attractive.

Two Croxton cars are shown, one a two-passenger racing roadster and the other a five-passenger closed-front touring car. Both are of the so-called "French" type formerly made by the Croxton-Keeton Co., of Massillon, Ohio, but now produced by the recently organized Croxton Motor Co., of Cleveland, which is vigorously continuing the production of the former line under the abbreviated name and with sundry valuable improvements. The 30 type shown has a 45-16x4½-inch four-cylinder motor with cylinders cast in pairs, thermosyphon cooling, three-speed selective change gear and shaft drive of the torque tube type. Its distinguishing feature, whence it derives its name, is in the form of radiator employed, which is of the dashboard pattern, the fan action being secured by the use of a flywheel fan. The hood is sloping and the motor perfectly accessible.

Although none of the cars has reached the show, announcement is made that, in addition to the 30 type, a new 38 model is just being introduced, which is an enlarged and somewhat modified edition of the same style. The new car has a straight-line body of characteristically original lines, having high doors, front and rear, a clean running board and tank and tire carrier in the rear. Its cylinder dimensions are 4½x5½ inches, it has a large diameter cone clutch instead of a multiple disk



STEVENS-DURYEA DISPLAY IN GRAND HALL

type, and Timken roller bearing axle equipment, instead of an equipment of annular ball bearings. The magneto is placed transversely in front of the motor, instead of at one side, as in the older model, although the Bosch set spark pattern is retained. In most other respects the two models are similar, except for particulars of minor importance.

The Morse car, which is built and exhibited by the Easton Machine Co., though on view for the second time only, reveals few of the alterations which sometimes occur to a new product between its first and second appearances. Indeed, it is almost exactly the same as last year. One of the new features that may be instanced is an optional arrangement of the gasoline feeding system. As before, the pressure system, employing waste gases from the engine, is standard, but if the purchaser so desires, a pump system with auxiliary tank will be installed. The car is of remarkably

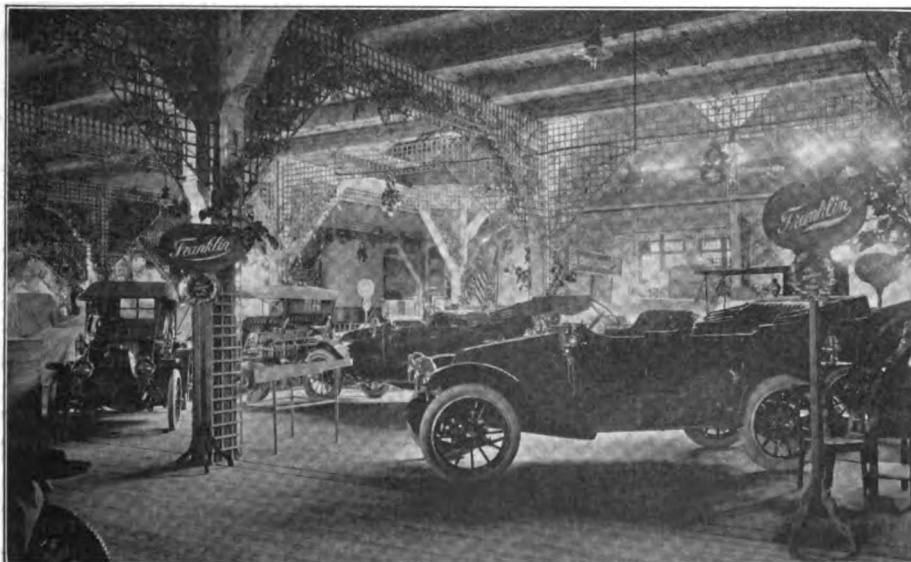
good construction and exhibits considerable originality of design.

Among original features may be mentioned the valve-in-the-head motor with its 4½x5 inch cylinders, its all-steel, disk clutch, well-proportioned gearset and heavy torque tube and axle equipments. The push-rods of the valve gear are silenced by means of small springs which keep them in constant contact with the cam lifters, being housed and protected by means of brass caps. The oiling system is a trifle unusual in that it is equipped with two gear-driven circulating pumps instead of one. The main pump accomplishes the feeding of the oil in the usual way, but the second, which is of double the capacity of the first, is employed solely to draw off the overflow from the case, maintaining it at a constant level under all circumstances.

Another good point is the design of the large ball and socket joint which supports the forward end of the torque tube. The latter, owing to the absence of radius rods and the use of full-elliptic rear springs, is called upon to perform the double function of absorbing the torsional stresses of the axle and also the traction stresses which are developed at the wheels. As a means of ensuring good action under all circumstances, provision is made for keeping the metallic housing filled with grease at all times, to which end an ordinary compression grease cup is mounted on the right side of the chassis outside the frame, and is connected to the universal housing by means of a tube. In its latest guise, the car is equipped with a very attractive form of torpedo body.

THE NEW TRUCKS AT BOSTON.

When a heavily laden truck encounters an obstacle in the road enormous stresses are set up from which the front springs are more liable to suffer than the rear ones, for the reason that the front axles are not commonly equipped with radius rods. To



FRANKLIN CARS STAGED IN EXHIBITION HALL

prevent the frequent spring breakages which occur from this cause, the designer of the Harrison truck has returned to the principle of the old wagon reach-rod. Connecting the front and rear axles is a central bar—a torsion bar, so-called—which is attached to the front axle by a universal joint and which is cushioned in both direc-

control mechanism are well protected from shock.

The power plant of the $3\frac{1}{2}$ -ton model which is on exhibition is of the four-cylinder vertical type with cylinders of $4\frac{5}{8} \times 5$ -inch dimensions, cast in pairs, and having valves in the head. It is rated at 36 horsepower and drives the rear wheels through

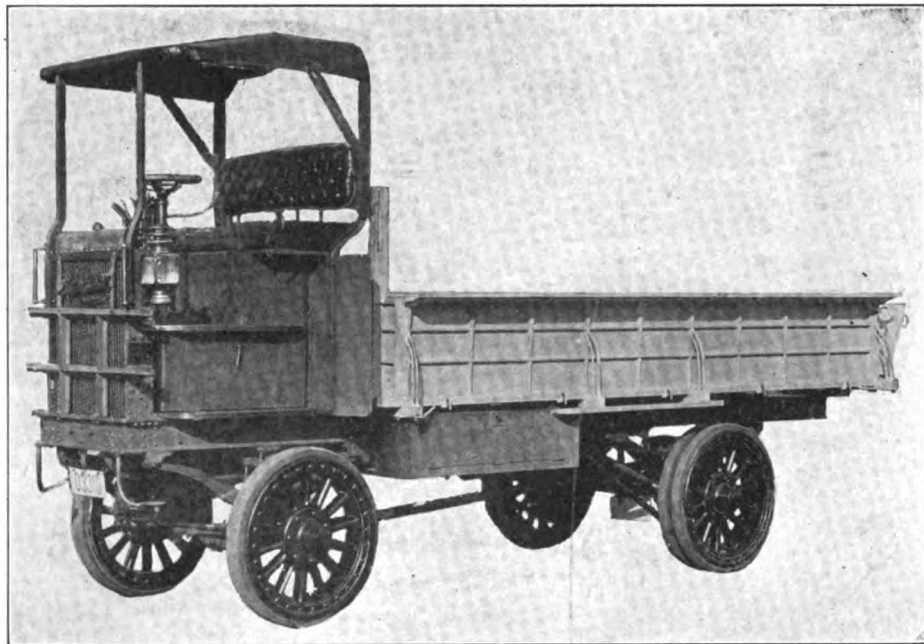
of the case to a large sight-feed glass of special construction which is mounted on the dash. The system is so arranged that the amount of oil delivered is constant, or nearly so, regardless of the rate of engine revolution. To this end the pump is made of relatively large capacity and delivers a considerable quantity of oil at low speeds. It is fitted with a by-pass which has a spring controlled valve opening outwardly. A ball cock on the dash, permits the operator to regulate the amount of flow to the sight-feed and, incidentally, to control the pressure of the system. The principle involved is simple enough in theory; the tendency of the pump to deliver more oil as the speed of the engine increases is counteracted by the opening of the by-pass valve, which reduces the amount delivered to the bearings by a proportionate amount.

The motor and change gear are mounted on independent subframes which are supported independently on three points. The framework carrying the engine is hinged in front and articulated to a cross-frame member in the rear by means of an arched cross member which spans the driving shaft. The gear-box mounting is similar save that it is reversed, the gear end being supported by the counter shaft while the front is hung from the same cross frame member that supports the rear of the engine subframe.

The exhibit is graced with a huge rear axle designed for a 12-ton truck which is in process of construction. The assembly shown, which consists of the axle, main and supplementary springs and wheel hubs with sprockets and brake drums, weighs something upward of 2,900 pounds—a fact which affords some small idea of its massiveness. The truck in question is to be of practically the same design as the 7,000 pound type on view save that it is equipped with a six-cylinder motor of 60 horsepower.

It has been known that the Speedwell Motor Car Co., of Dayton, O., has been building commercial vehicles in a quiet and rather tentative way for some little time, but it was not until the opening of the present show that formal announcement was made of a stock product of that nature, nor had it been generally known that one was ready for the market. The product thus revealed proves to be commensurate in the matter of execution with that of the pleasure cars built by the same manufacturer, and like them disclosing not a few original points. Two styles of chassis are now built, one of $1\frac{1}{2}$ to 2 ton capacity and the other of 3 to 4 ton rated lading. They are similar in general form, but have proportionate differences in dimensions.

Particularly striking are the means that have been adopted in order to render the power plant thoroughly accessible under all circumstances—even when the vehicle is under load. With this object the con-

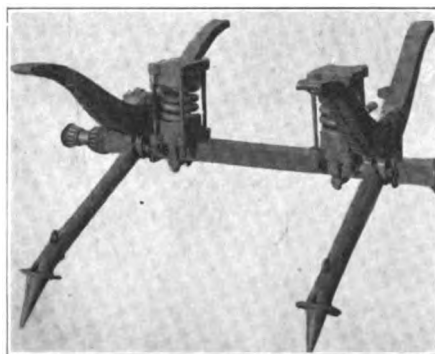


HARRISON $3\frac{1}{2}$ -TON TRUCK SHOWING REACH CONSTRUCTION

tions on the rear axle. The effect of the bar, of course, is to remove all strain from the springs and bolts, thereby leaving them free to take care of their proper work.

These Harrison trucks, which are being exhibited for the first time, are made by the Robert Harrison Co., of South Boston, a concern which has been in the wagon business for many years and which has been actively at work on the development of a motor truck for the past two years. The resulting product embodies many novel features in addition to that already referred to. Another of them is the method of supplementary suspension which embodies the use of auxiliary load-bearing springs on the axles that are designed to come into action only when the chassis is deflected under load. The supplementary springs are of the coil type, provided with bearing caps which are secured by four long guide bolts that serve the double purpose of preventing the springs from working out of line, instead of being deflected, and also of submitting the springs to a slight initial compression. The extra springs that are used in front are of duplex design, consisting of four inner and outer coils. Under very light loads only the inner coils are engaged, while at full loads both sets of coils act simultaneously. In consequence of this arrangement and the employment of the reach rod, the main front springs are less stiff than otherwise would be necessary, so that the power plant and

a cone clutch, selective change gear and double wide chains. Points of originality are embodied in both the cooling and oiling systems. The basic purpose is that of enabling the motor to perform with a high rate of efficiency even when the truck is progressing at extremely low speeds and under heavy load. To this end two radiators are employed, one in the usual dash-



HARRISON SPRING STRUCTURE

board position common to trucks of the motor-under-the-seat type, while the other is carried horizontally in the rear. The radiators are of original, vertical tube construction, set in heavy headers and frames, the latter being built solidly into the frame for the sake of originality. For lubricating purposes a gear pump is employed which lifts oil from the reservoir in the bottom

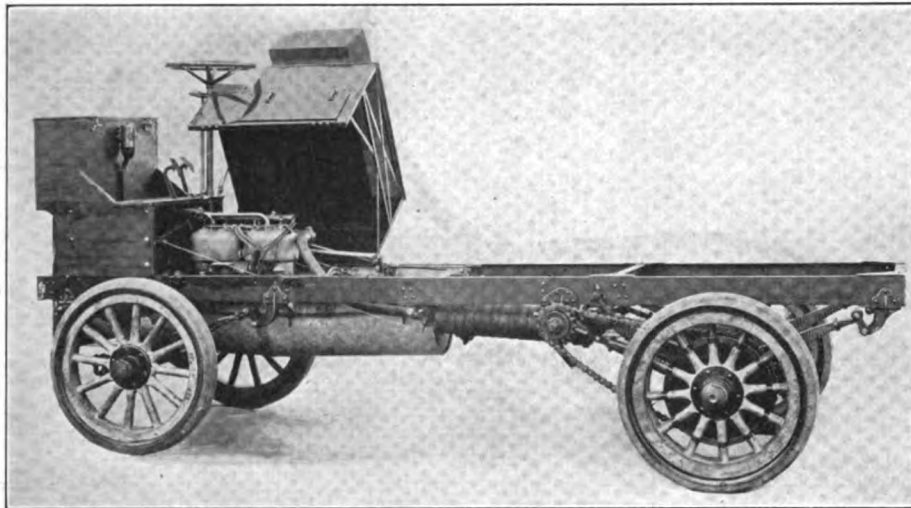
trol mechanism, including the steering column, lever and pedal supports, radiator mounting and gasoline and oil tanks, are all mounted upon a rigid framework in front of the motor, which is placed beneath the driver's seat. The latter, including the rear portion of the footboard and the sides, constituting the rear section of

sists of a pair of expanding band brakes in the rear and a pair of expanding brakes on the ends of the countershaft on the larger, and expanding rear wheel brakes and contracting driving shaft brake on the smaller of the two chassis. In both instances the transmission brakes are actuated by the side lever, while the rear wheel

engine and gearset are carried by a sub-frame, there is absolutely no visible objection to the arrangement, uncommon though it may be. The truck, which is made by the H. E. Wilcox Motor Car Co., of Minneapolis, Minn., and is being shown for the first time in New England, although it has been in use in the West for several years, is distinguishable by the fact of its standard equipment with a rectangular "limousine" cab for the protection of the driver from the elements.

The control mechanism is placed at the right of the cab, the motor, which projects well above the floor line, being protected by a hinged hood of sheet metal. By raising the hood the driver is enabled to reach and adjust the carburetter and magneto without leaving the cab, while the former can be attended to without leaving the seat. Although the truck is produced in various styles, down to a 1-ton delivery, and sightseeing and buses, the 3-ton size is the only one on view.

The other unusual features of the chassis construction are the method of mounting the countershaft, which is built as a unit with the change of the gear, and the anchorage of the front axle. Unlike common practice, the countershaft is mounted in four bearings, two beneath the frame side members and two at the extreme ends of the shaft and outside the sprockets. The latter are supported by cast steel brackets, which extend outward from the side of the frame in front of the shaft. To relieve



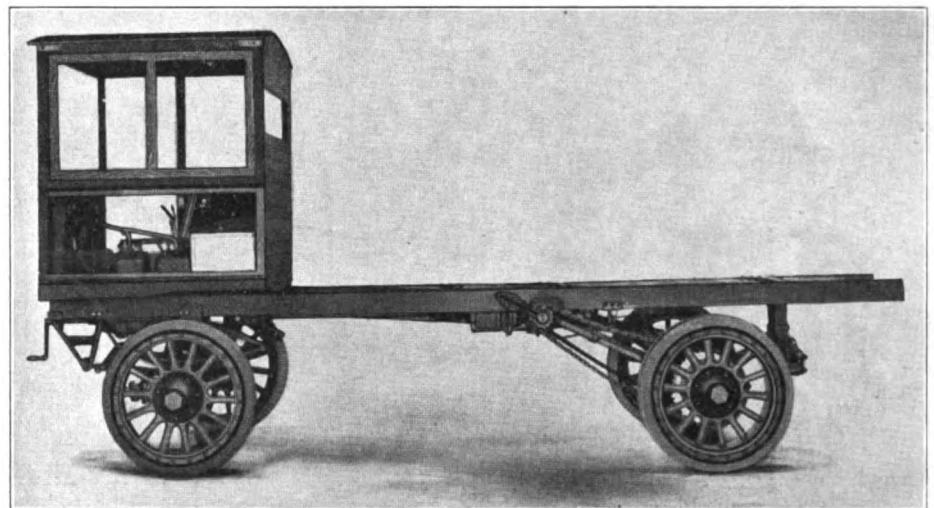
THE SPEEDWELL 1½-TON TRUCK SHOWING TILTED CAB

what is frequently termed the cab, is rendered entirely independent of the chassis, and is in reality nothing more or less than a stout hood upon which is placed the seat. Like an ordinary hood, it is removable merely by drawing the pins from a pair of stout hinges on either side. For ordinary repairs, however, it is only necessary to remove the pins from the side from which it is desired to come at the engine and capsize the entire structure over the opposite hinges, while the placing of the control mechanism at the extreme front of the chassis renders the motor entirely clear of obstructions.

Another noteworthy point is in the mounting of the countershaft, which is roller bearing mounted, and which is entirely independent of the gear box, being placed somewhat to the rear of and connected with the latter by means of a universally jointed propeller shaft. The structure is similar in form to the live rear axle of a car, like it being held in alignment by means of a torsion bar. The latter is of the triangular variety, and serves the same purpose as does the torsion rod in a shaft-driven car, by relieving the anchorage of the ends of the housing of the heavy reaction of the bevel gearing. The effect in the case in point is to relieve the side driving chains from the effects of sudden shocks in the transmission line, the forward end of the cushion bar being cushioned, and so to tend to reduce the liability of chain breakage.

The larger of the two machines is driven from the left side, but the lighter chassis has the more common right-hand driving arrangement. The braking equipment con-

brakes are applied by means of a pedal having something like a 20-inch leverage. Both vehicles have very short wheel base, considering their capacity, that of the larger being only 115 inches, while the smaller has a 110-inch base. The 1½-ton



WILCOX 3-TON CHASSIS WITH ENCLOSED DRIVER'S CAB

truck is equipped with a 4¼x4½-inch motor of 30-horse rating, while the 3-ton has a 50-55 horsepower engine.

So that there may be ample space for the driver to work the machine and also with the object of rendering the power plant readily accessible, the designer of the Wilcox truck has adopted the novel expedient of setting the entire mechanism over to the left side of the chassis. As the chassis is of full width in front and the

front springs of all strain due to shocks caused by the wheels, striking obstacles in the road, heavy radius rods are employed. These are placed in front of the axle, their front ends being supported by A-shaped brackets, which extend downward from the front corners of the frame.

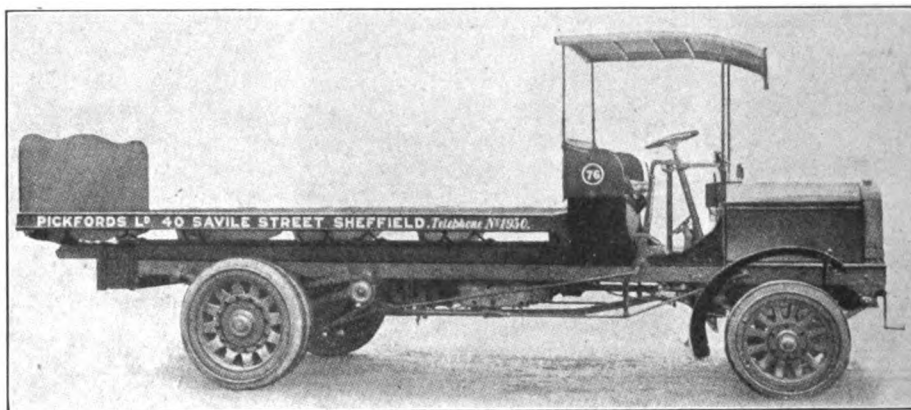
Although the W. A. Wood Automobile Co., of Kingston, N. Y., is building an American version of the English Commer truck, it is an imported product of that

type that is being shown in the basement of Mechanics' building. Incidentally, the vehicle is the largest in the show, being of seven-ton rated capacity. The Commer company is one of the older ones in the British field, and has been unusually successful, the chassis on view being a sample of the standard type which has been in use for a number of years with but minor changes. It is equipped with a $4\frac{3}{4} \times 5\frac{1}{2}$ inch T-head motor with double ignition, automatic oiling and other approved features. The change gear is of the sliding dog type, driving to the counter shaft and differential unit, which is separate from the gear box through a buffer coupling, in which rubber cushions are interposed between the engaging faces of a pair of driving dogs to relieve the transmission of sudden shocks. Side chains take care of the final drive.

The method of controlling the change speed gear is unusual and semi-automatic. The controlling lever, or "indicator," is mounted under the steering wheel and is free to be moved at any time, whether the truck is in motion or at rest. The notches corresponding to the various speeds are progressively arranged, but owing to the independence of the controller, mentioned, the action is really selective in its nature. Moving the lever, instead of forcibly displacing the clutch-shifting yokes, merely serves to compress springs by which they are actuated. If the machine is at rest this results in the immediate movement of the proper clutch and engagement of the work-

bands are applied by means of vertical arms, which are connected to the rear of the chassis by means of adjustable radius rods. By this means the brake torque is removed from the axle and springs and a fruitful cause of trouble eliminated. The chain tension is regulated in the usual way by means of adjustable distance rods between the axle and countershaft.

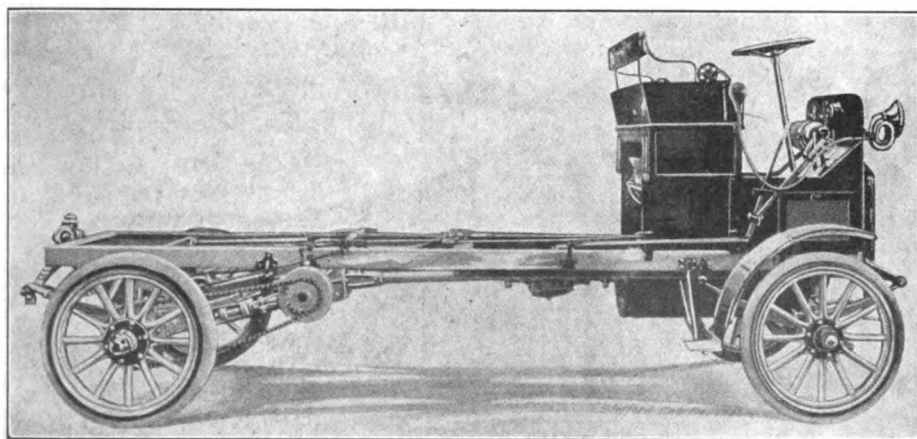
Decatur trucks, or "Hoosier Limiteds,"



THE 7,000 POUND COMMER TRUCK—AN ENGLISH PRODUCT

as they are called by the Decatur Motor Car Co., have been made for several years, but previously have not appeared in the East. They are of one-ton capacity with ample load-carrying capacity ensured by the mounting of the engine under the seat and foot-board in front, while at the same time the wheel base is kept down to 129

many particulars, the engine, which is of 4x4 inch bore and stroke, being of the Rutenber type, while the master clutch is the well-known Hele-Shaw. Sliding gear transmission with side chain drive, the outer ends of the countershaft being equipped with internal expanding brakes, complete the power plant. Although solid tires are listed in the specifications, the 32x3x3½ inch sizes being standard, the maker expresses a preference for pneumatic



THE DECATUR "HOOSIER LIMITED" 1-TON TRUCK

ing faces. If the transmission is under load, however, the pressure between the faces of the dog teeth is sufficient to hold in engagement any clutch that happens to be in use. In consequence the drive continues through that clutch until the clutch is momentarily released and immediately re-engaged, when the shift takes place automatically.

Another original feature is the method of anchoring the brake bands. The latter, instead of being attached to the axle proper, are prevented from rotating when the

inches. The cab framework is of steel and carries a cradle for the gasoline tank and the radiator, in addition to the seat. The power plant and control mechanism are independent of it, however, so that the entire superstructure can be removed merely by taking out four bolts. Another unusual point is that the spring mounting of the radiator is so designed that the latter may be swung outwardly and to one side, like a door, when it is desired to get at the front of the motor.

The general construction is standard in

equipment, 34x5 front and 34x4 dual rear, being the sizes used. The car is hung on semi-elliptic springs in front and platform in the rear, the latter being supplemented by an extra cross spring over the rear axle, which is fitted with bearing rollers that come into contact with special bearing plates on the main spring perches.

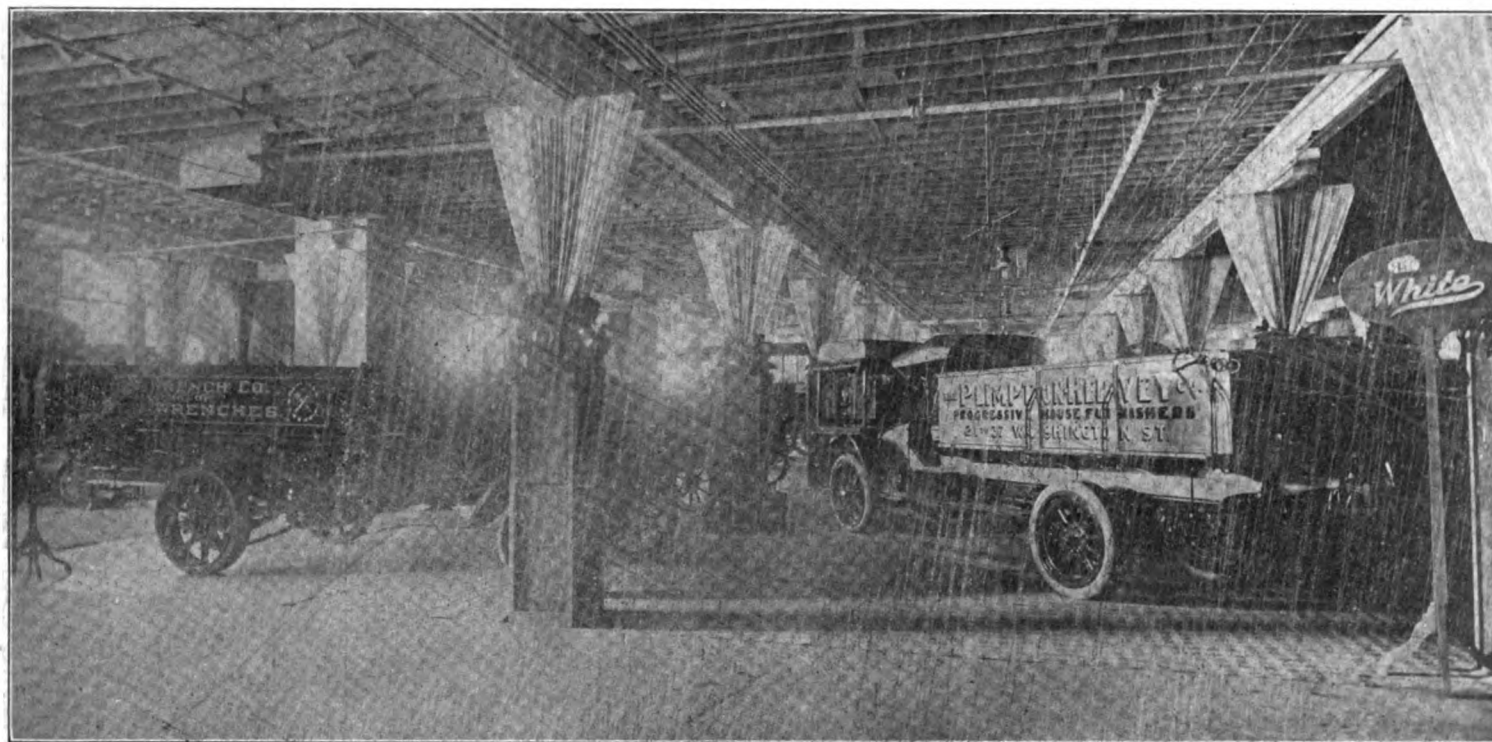
SUMMARY OF AUTOMOBILES.

Abbott-Detroit Motor Car Co. of New England, Abbott-Detroit.
American Automobile Co., American and Everitt "30."
American Simplex Co., Amplex.
Atlas Motor Car Co., Atlas pleasure and commercial.
Autocar Co., Autocar pleasure and commercial.
Atterbury Motor Truck Co., Buffalo trucks.
Bedard, F. S., Somerville, Mass., Whiting.
Boston Electric Garage Co., Detroit electric pleasure and commercial.
Boston Motor Co., S. G. V. and Acme.
Bowman Co., J. W., Stevens-Duryea.
British Napier Motors, English Napiers.
Brush, Sampson Boston Co., Brush and Sampson "35" pleasure and commercial.
Butler Motor Car Co., Rapid trucks.
Buxton Machinery Co., W. A., Garford.
Cadillac Automobile Co. of Boston, Cadillac.
Carpenter Motor Garage, Chadwick.
Cartercar Co., Cartercar.
Case Threshing Machine Co., J. I., Case.
Cavanaugh, Roy, Carhartt.
Clark, Edw. S., Clark gasoline trucks.
Coburn Auto Sales Co., Enger and Johnson pleasure and commercial.
Columbus Buggy Co., Firestone-Columbus.
Corlew, Frank, Wilcox trucks.

Connell & McKone Co., Overland pleasure and commercial.
 Croxton Boston Co., Croxton.
 Curtiss-Hawkins Co., Speedwell pleasure and commercial.
 Dike, Francis, Palmer & Singer.
 Dodge Motor Vehicle Co., Pope-Hartford and Waverley electrics.
 Easton Machine Co., Morse.
 Empire Motor Car Agency, Empire "20."
 Essex Automobile Co., Warren-Detroit.
 Extein Co., The, Grabowsky trucks.
 Fay Co., Roy A., Matheson.
 Fiat Automobile Co., Fiat.
 Ford Motor Co., Ford.

Lenox Motor Car Co., Lenox.
 Linscott Motor Co., Reo and Moon.
 Locomobile Co. of America, Locomobile.
 Lowe-Howard Co., Krit and Correja.
 MacAlman, J. H., Columbia and Stearns pleasure and Commer trucks.
 Maguire, J. W., Pierce-Arrow pleasure and commercial.
 Massachusetts Motor Co., Oakland.
 Morse, Cutler & Co., Alfred, Renault and S. P. A.
 Motor Mart, Buick pleasure and commercial.
 Nichols Co., D. P., Kelly, Cass and Beyster-Detroit trucks.

Studebaker Bros. Co. of N. Y., Studebaker gasoline and electric, E-M-F and Flanders "20."
 Taylor Motor Sales Co., Herreshoff pleasure and Decatur trucks.
 Thomas & Co., Chauncey, Cunningham.
 Thomas Motor Branch Co., Thomas.
 Underhill Co., Knox pleasure and commercial.
 United Motor Boston Co., Maxwell.
 Velie Motor Vehicle Co., Velie.
 Welch Motor Car Co. of New England, Welch-Detroit.
 White Co., White gasoline and steam pleasure and gasoline trucks.



ONE SECTION OF THE COMMERCIAL VEHICLE DISPLAY IN THE BASEMENT

Franklin Automobile Co., Franklin pleasure and commercial.
 Fuller, Alvin T., Packard pleasure and commercial.
 General Vehicle Co., General electric trucks.
 Grout Automobile Co., Grout.
 Habich Co., G. E. & H. J. Cole.
 Havers Motor Car Co., Havers.
 Harrison Co., The Robt., Harrison trucks.
 Henry Motor Car Sales Co., Henry.
 Hudson Colby Co., Haynes.
 Imperial Auto Co., Imperial.
 International Harvester Co. of America, International commercial.
 Inter-State Automobile Co., N. E. Branch, Inter-State.
 Jackson Motor Car Co. of New England, Jackson.
 Jenkins, W. M. & Co., Mitchell.
 Kelton, Walter E., Cutting.
 Kelsey Mfg. Co., C. W., Motorette.
 Kissel Kar Co., Kissel.
 Koehler S. G. Co., H. J., Hupmobile.
 Lexington Motor Car Co., Lexington.

Olds Motor Works Boston Branch, Oldsmobile.
 Parker & Co., F. R., Elmore pleasure and Chase commercial.
 Park Square Automobile Station, Alco pleasure and commercial and Stoddard-Dayton.
 Peerless Motor Car Co. of New England, Peerless pleasure and commercial.
 Premier Motor Co. of New England, Premier.
 Proctor Auto Co., Pullman.
 Rambler New England Co., Rambler.
 Rawles-Cobb Co., Auburn.
 Reliance Motor Truck Co., Reliance trucks.
 Roxbury Auto Truck Co., Harder trucks.
 Russel & Co., W. L., Regal and Apperson pleasure and Morgan trucks.
 Schacht Motor Car Co., Schacht pleasure and commercial.
 Selden Motor Car Co. of Massachusetts, Selden and Moline.
 Smith, Fred S., Mercer.
 Standard Motor Truck Co., McIntyre.
 Stanley Motor Carriage Co., Stanley steam.

White-Ware & Co., Bergdoll.
 Whitten-Gilmore Co., Chalmers and Hudson pleasure and Dayton trucks.
 Wing, F. E., Marmon.
 Winton Motor Carriage Co., Winton.

NEWNESS IN ACCESSORIES.

"Of the making of accessories there is no end," would aptly express the sentiments of the majority of visitors, who, having seen all there is to be seen in the various exhibits of cars, naturally gravitate to the stands where ignition devices, lubricants, shock absorbers, parts and 1,001, or, to be more exact, 173, separate exhibits of such things are displayed. Whether or not vacuum cleaners and dictionaries constitute accessories is an open question, but nevertheless they are there, and are flanked by a miscellaneous assortment of articles that runs the whole gamut of the automobile industry.

The problem of just how to make their respective exhibits attractive and of crowd-gathering proclivities has been solved by

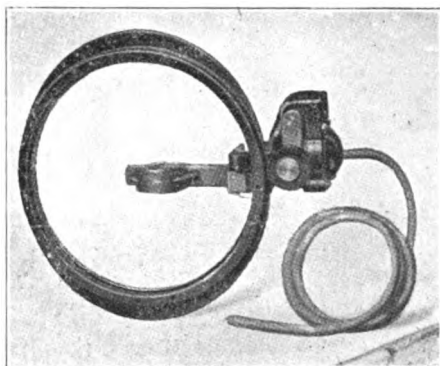
some in novel ways. Of course, such well-known demonstration fixtures as the Truffault-Hartford "rough rider twins," the Splittdorf mammoth magneto that really sparks, and the array of Bosch magnetos which the crowds never tire of "cranking," are present, and down in the basement the Chandler & Farquhar Co. has a model machine shop in operation where lathes and drills and automatic machinery are demonstrated. Then there are the lubricant exhibitors, the most striking display of the kind being that of the White & Bagley Co., where a miniature yellow windmill revolves in true windmill style. The landscape effect is further enhanced by the presence of a "water" fall, the water being represented by Oilzum. Another of the attractive lubricant exhibits is the illuminated and revolving barrel at the stand of Geo. K. Haws, where Panhard oils are shown.

Almost wherever it is possible to show accessories in operation this is done, and not the least attractive of the plenteous assortment of "buzzers" are the speed indicators and mileage recorders.

As is always the case, the Boston show included a number of accessories which did not appear at either of the national exhibitions, and most of them came from Boston or its neighboring towns. The familiar Hoffecker "steady hand" speedometers are shown by the Hoffecker Co., and, while the instruments themselves are the same as were shown in New York and Chicago, they appear for the first time with a new form of flexible shaft casing which is claimed to be absolutely strain-proof. The inner part of the casing, which takes the wear of the shaft, is formed of a spirally wound steel ribbon. Over this a brass ribbon is wound in such a way as to overlap the joints in the other. A weight of 70 pounds suspended from one of the new shafts has no apparent effect on the operation of the instrument to which it is connected on the demonstrating stand. The Reliance speedometer, also of the centrifugally operated variety, is shown by the Reliance Speedometer Co., and has changed but slightly from the original form in which it made its debut last year. Exhibited by Smalley & Daniels, together with a number of tire specialties, including "Interlock" inner tires and "Sure Hold" and "Murray" inner blow-out patches, the Forse speedometer also belongs in the centrifugally operated class, but differs from many others in that no springs are used in it. The Stover-Lang, which is shown by the Stover-Lang Co., is neither centrifugally nor magnetically operated, but is controlled pneumatically without the use of a flexible shaft, a small rubber tube serving to transmit puffs of air—one for every half revolution of the wheel—to the instrument, where, by means of a clock escapement, time periods of five seconds are used as a basis of all calculations. By means of the mechanism in the instrument an actual count

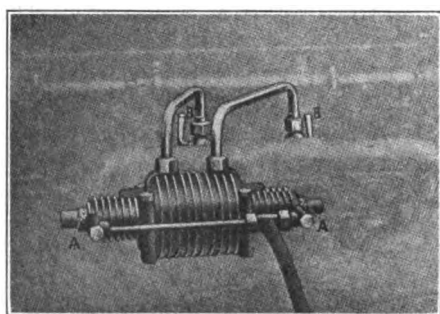
of the number of revolutions of the wheel is made and shows on the dial in miles per hour.

Among other new accessories designed to increase the pleasure of motoring there is the Bi-Plex tire pump, which is shown at the stand of the Motor Specialties Co.



S-L SPEED-MILEAGE-METER

Unlike other power-operated tire pumps, the Bi-Plex is of small dimensions and light weight, and depends, not on any of the moving parts of the motor, but on the exploding gases, which are utilized to operate a double acting piston by means of two copper pipes connected to two of the cylinders. The explosions in the engine cylinders drive the pump piston alternately to one end and the other of the pump cylinder, forcing pure air into the tire. The Hartford Auto Tire Pump, exhibited by C. S. Knowles, also is of the power-operated type, but is driven by friction off the fly-wheel. A double adjustment permits of it being placed in any of a number of posi-



BI-PLEX TIRE PUMP

tions, and its action is controlled by means of a small thumbscrew. Still another pump is shown by the Kinney Mfg. Co. It is a new type of power-driven centrifugal pump, which may be used for oil or water or air. It is intended for garage use, and is belt-driven.

The Sun-Lite, a new type of acetylene generator, exhibited by the Richard A. Crooker Co., is of particularly rugged construction, and embraces a novel filtering system, by means of which the gas reaches the burners in a cool, clean state, preventing clogging of the burners and insuring a clear, white light. The Champion Light-

er Co. exhibits the Koehler headlight igniter and the Simplex gas regulating valve, the former being an attachment by means of which the headlights may be lighted by a spark generated much in the manner of the old flint and steel method, and the latter a valve to be attached to gas tanks to regulate the gas pressure of the gas at the lamps, irrespective of the amount the tank valve is opened. The Rotante, as its name suggests, is a device intended to be attached to the headlights and to the front wheels to permit of the lights being turned in the same direction as the steering wheels. Holt & Bebee have a comprehensive line of electric and oil side and tail lamps and other electrical novelties. Electric lights and connecting attachments also are shown in a variety of styles by the Culver-Stearns Co., and include the C-S gas attachment, by means of which acetylene headlights may be converted to use electric bulbs without the removal of the burners.

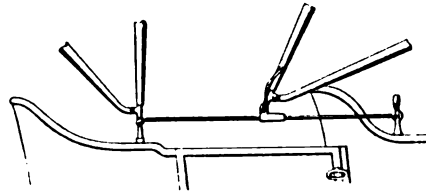
Harvard storage batteries, which are exhibited by the American Storage Battery Co., also come under the head of car lighting accessories which are on view and embody a new type of grid for which longevity and great efficiency are claimed. The new grids are in the form of flat, hollow boxes, with thin diagonal strips on opposite sides running in opposite directions. Into these grids the active material is forced under hydraulic pressure, the resultant plates being harder than is usual and of high efficiency. Supplementing a number of styles of Hermetic battery cases, intended for the carrying of dry cells, the A. S. Campbell Co. has on view a new electric swivel searchlight of small and compact appearance. It is intended for use on pleasure cars to assist the driver to read road signs and guide boards, and in the case of commercial vehicles to enable the driver to read house numbers without leaving his seat. Salom storage batteries and a wide variety of Niagara electric lamps are shown by the Bi-Motor Equipment Co. In connection with the Salom electric lighting system a chain of exchange stations throughout the country have been established, and at these stations it is possible to exchange a discharged battery for a charged one on payment of a nominal sum. A battery that is neither a dry cell nor a wet one, but is a combination of the two, is exhibited by the Burn-Boston Battery Co., and the New England Distributing Co. shows Odin dry cells in connection with its exhibit of Autoline oils, New York coils, Rhodes Unit Systems and Faust polishes.

With the increasing popularity of electric car lighting systems it is but natural that manufacturers of allied electrical products should turn their attention to this branch of the automobile industry, and the latest firm to enter this field is the Holtzer-Cabot Electric Co., of Brookline, Mass., which has for some years past been active in the production of small motors and gen-

erators. The new system, which is being shown for the first time, is unique in that it requires no sort of voltage or current-regulating device whatever, and no instruments, and that, while running at a fixed relation to the speed of the engine, the system delivers a constant current to the lights. Another novel point is that there are but two leads between the dynamo and the battery, and that they may be connected either way, that is to say, positive to negative or positive to positive, without altering the action of the machine and without reversing its polarity.

The keynote of the system lies in the use of the Edison battery. The battery is "floated on the line," and automatically takes care of the natural variations in the

which consists of both the articles indicated by the title of the company, is a new form of windshield. The lower half of the



MURRAY TOP RAISER

shield is formed of the same material as is used in the top with which the car is equipped. The upper half may be adjusted to several positions. The Murray

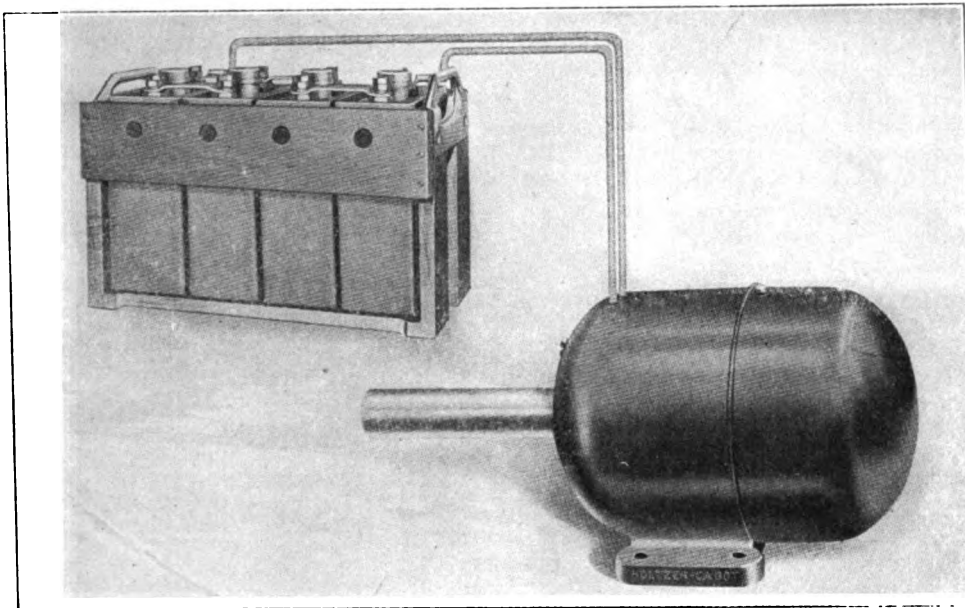
mitting it to slide back into place when the other side is manipulated by the operator. When not in use the Raiser is carried under the rear seat cushions.

For the repair man or the owner, a new kind of aluminum solder is exhibited by the Boston Aluminum Solder Co. It is what is termed a no-flux solder, which is to say that it is complete in itself and requires no other agent in its use. The Acme Torsion Springs, which are exhibited by the Acme Torsion Spring Co., are a new form of supplementary springs which are so styled because of their construction, which is such as to permit of their absorbing longitudinal as well as horizontal vibrations. They are exhibited fitted to both the front and rear springs of a touring car.

For the reviving of the luster on cars which have lost some of their pristine loveliness, Geo. O. Carleton is exhibiting a preparation styled U-Auto-Varnish, which is intended to be put on with a piece of cheesecloth, and which dries over night, leaving a glossy finish. Arco Spatzoff metal polish also is present at the stand of the Atlantic Refining Co., and T. R. Shannon shows another kind of cleanser and polish for use on enameled or polished surfaces. It is styled the Rapid Auto Cleaner and Polish, and is put up in liquid form for use by owners or garage men.

One of the principal features of the oil and gasoline storage tanks and pumps exhibited by the American Oil Pump and Tank Co. is that the pumps operate in both directions, which is to say that gasoline or oil, as the case may be, is delivered both on the up and down stroke of the plunger, thus obviating loss of time caused through returning the plunger to its original position after each up stroke. Several styles of measuring and non-measuring stationary and portable tanks are shown, and it is claimed that the tanks are made thoroughly rust-proof through the use of pure iron, which is galvanized, and not steel. Other types of measuring pumps and storage systems are shown by the Haines Measuring Pump Sales Co.

In the way of tire accessories Henry L. Hind & Co. are exhibiting a new preparation termed Tyr-Lube, which is in powder form, and is intended not only to take the place of soapstone or French chalk as a lubricant between the tube and the shoe, but to fill up any cracks or cuts which may develop in the latter. It is claimed for the preparation that in addition to serving as a lubricant and preventing shoes and tubes from sticking together, it also prolongs the life of the tire by preventing the sulphur from drying out of the rubber. Brown's Perfection inner tube, which is exhibited by J. H. Morse, is styled puncture-proof by reason of the fact that the deformation caused by inflation tends to compress rather than to stretch the rubber in the tread. This is accomplished by making the tread con-



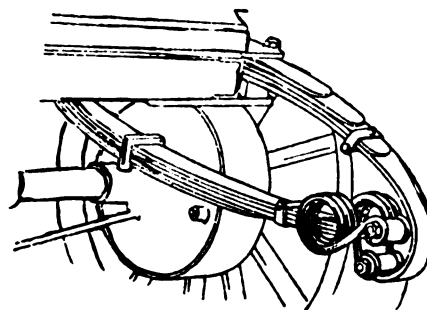
THE NEW HOLTZER-CABOT LIGHTING SYSTEM COMPLETE

generator output. That is to say, as the speed of the armature increases and consequently the output, the battery receives its charging current at a correspondingly increased rate. The only safeguard employed in the system is a cut-out actuated by a small centrifugal governor, which cuts out the dynamo when its speed is reduced to a point where there is danger of draining the battery.

The non-polarity of the generator when it is not running, which is the feature that makes possible the interchange of the connecting wires without injury to the system, is secured by the use of non-magnetic fields, which derive their energy entirely from the current excitation. The windings are of the compound type, and in starting the fields are energized by current from the battery. Hence it is this current which determines the polarity of the field and renders the direction of current flow substantially independent of the direction of armature rotation.

The most striking feature of the exhibit of the Empire Top & Wind Shield Co.,

Top Raiser is the name of a device exhibited by P. A. Murray & Co., which is intended to enable one person to raise any top without assistance. The turned end of the Raiser, which is nothing more than



ACME TORSION SPRINGS

a long rod fitted with a brass sliding sleeve, is hooked into the front top iron and the other end attached to the rear bows by means of a strap. The front bows are then hooked into the sliding sleeve, the rod preventing the top from falling and per-

cave when deflated, instead of convex, as tubes ordinarily are made. The application is new in this case, though the principal has been tried a number of times by others. For the prevention of chafing and blow-outs caused by fabric breaks inside the shoe, Tire Preservers are shown by the Boston Tire & Rubber Co. They are a form of inner shoe, and are made of several plies of fabric and rubber vulcanized together into an endless casing. Whittaker non-skid tire chains form the exhibit of the Whittaker Chain Tread Co. The cross chains are hardened by the "Besdam" deep encasement hardening process, and the side chains are of malleable steel.

W. H. Leland & Co. are showing a line of Worcester spark coils, and the exhibit also includes an assortment of grinding machines and other shop machinery. "Sensitive Sensitive" drills also are shown, and one in particular has two spindles, one of which is arranged for tapping. By means of gearing the tool cuts slowly and is withdrawn rapidly.

In the field embraced by ignition specialties, two new spark plugs make their appearance. The Vizzo spark plug, exhibited by the Auto Specialties Co., has the top of the porcelain encased in a glass cylinder, which surrounds an auxiliary spark gap. Thus the kind of spark the plug is getting at all times is visible and trouble easily is located. The Phillips timer also is shown at this stand. In the Star Spark plug, which is displayed by the Coward Auto Supply Co., a new principle is involved. The shell is made slightly longer than is usual and forms a good-sized combustible chamber, the outlets being a number of round holes in the sides and bottom. The positive electrode is threaded at the sparking end with a "right hand" thread, and the negative, formed by the inside of the shell, has a "left hand" thread. Being in close proximity, a multiplicity of sparking points is insured.

A gasoline-driven generating set for the electrical illumination of rural districts is shown running under its own power by the General Electric Co., Schenectady, N. Y. The exhibit also includes a number of electrical specialties, such as fan motors, motor-driven water pumps and household fixtures, and is further rounded out by the appearance of a new low-tension magneto, which has been in the process of evolution for some time, but which is now making its initial public appearance. The magneto is the product of the Lynn works of the General Electric Co., and may be said to be of improved, rather than radical, construction. One particular point in its design to which attention is called is the arrangement of the contact-breaker with respect to adjustment. The moving contact point, instead of being permanently mounted in the rocker arm, is threaded into place and secured from working by means of a pinch screw. The latter can be loosened

by means of an ordinary screwdriver, while the adjustment of the contact point is secured by inserting a nail or pin in one of two holes drilled in the knurled head and turning it. The adjustment may be made without removing the breaker from its casing, while the cover plate, which also carried the ground connection for the armature winding, is held in place by a spring clip. The distributor is of the stationary brush type, the insulating fiber against which the brushes bear during the non-sparking interval being specially prepared and fitted to prevent swelling or warping.

SUMMARY OF ACCESSORIES.

Acme Torsion Spring Co., Boston, Mass., Acme supplementary springs.
 Adams, J. Q., & Co., Boston, Mass., dictionaries.
 Ajax-Grieb Rubber Co., New York City, Ajax tires.
 Ajax Trunk & Sample Case Co., New York City, tire trunks.
 Aluminum Solder Co. of Boston, Boston, Mass., aluminum solder.
 American Ever Ready Co., New York City, Ever Ready batteries and lamps.
 American Oil Pump & Tank Co., Boston, Mass., oil and gasoline storage apparatus.
 American Storage Battery Co., Cambridge, Mass., storage batteries.
 Amesbury Metal Body Co., Amesbury, Mass., bodies.
 Atlantic Refining Co., Cleveland, O., Arco Spotzoff metal polish.
 Apple Electric Co., Dayton, O., Aplco lighting systems.
 Auburn Auto Pump Co., Auburn, N. Y., tire pumps.
 Austin & Doten, Boston, Mass., Shelby steel tubing.
 Auto Equipment Mfg. Co., Newton, Mass., specialties.
 Auto Improvement Co., New York City, accessories and specialties.
 Auto Specialty Co., Boston, Mass., Vizzo spark plugs.
 Baldwin Chain & Mfg. Co., Worcester, Mass., Baldwin chains, Brown steering gears and recoil checks.
 Batavia Rubber Co., Batavia, N. Y., Batavia tires.
 Bi-Motor Equipment Co., Boston, Mass., Salome storage batteries, Niagara lamps, etc.
 Booth Demountable Rim Co., Cleveland, O., Booth demountable rims.
 Borne-Scrymser Co., New York City, Colonial lubricants.
 Bosch Magneto Co., New York City, ignition devices.
 Boston Tire & Rubber Co., Boston, Mass., tires.
 Bowser, S. F. & Co., Fort Wayne, Ind., oil and gasoline storage apparatus.
 Boyd, F. Shirley, Boston, Mass., Dixie horns, Hawthorn pumps, etc.

Bucklin, Walter S., Boston, Mass., insurance.
 Burn-Boston Battery Manufactory Co., Boston, Mass., sealed liquid batteries.
 Butts & Ordway, Boston, Mass., tools.
 Cerda, Arturo G., Boston, Mass., Rotante headlight bracket.
 Campbell Co., A. S., Boston, Mass., Cello hand searchlights, battery boxes and supplies.
 Champion Ignition Co., Detroit, Mich., A. C. spark plug.
 Champion Igniter Co., Boston, Mass., Simplex gas regulating valve and Koehler headlight lighter.
 Chandler and Farquhar, Boston, Mass., machinery, tools and machinists' supplies.
 Chicago Pneumatic Tool Co., Chicago, Ill., electric drills.
 Clark Foundry Co., Rumford, Me., castings.
 Clayton Air Compressor Works, New York City, garage and portable tire pumps.
 Cleveland Speed Indicator Co., Cleveland, O., Cleveland speed and time indicators.
 Coes Wrench Co., Worcester, Mass., wrenches.
 Columbia Lubricants Co. of New York, New York City, lubricants.
 Connell, W. J., Boston, Mass., Pittsfield coils, plugs and magnetos and W. & S. carburetters.
 Connecticut Tel. & Elec. Co., Meriden, Conn., shock absorbers and ignition devices.
 Consolidated Rubber Tire Co., New York City, tires.
 Continental Caoutchouc Co., New York City, Continental tires.
 Cook's Sons, Adam, New York City, lubricants.
 Couch & Seeley Co., Boston, Mass., Cast-grain speedometers.
 Coward Auto Supply Co., Boston, Mass., supplies and accessories.
 Cox Brass Mfg. Co., Albany, N. Y., windshields and buffers.
 Cramp & Sons Ship & E. B. Co., Wm., Philadelphia, Pa., bronze and bearing metals.
 Crane, L. M. & Co., Boston, Mass., lubricants.
 Crooker Co., R. A., Boston, Mass., Sunlite generator.
 Crowell Chemical Co., Beverly, Mass.
 Culver-Stearns Mfg. Co., Worcester, Mass., electric lighting specialties.
 Daniels, Smalley, Boston, Mass., Kokomo ignition appliances, Forse speedometer, Kingston carburetters, etc.
 Dean Electric Co., Elyria, Ohio, Tu-to horns.
 Diamond Rubber Co., Akron, O., Diamond tires.
 Dixon Crucible Co., Jos., Jersey City, N. J., graphite.
 Dorian Remountable Rim Co., New York City, Dorian rims.
 Dover Stamping & Mfg. Co., Cambridge, Mass., drip pans, funnels and measures.

- Duren & Kendall, Boston, Mass., vacuum cleaners.
- Eagle Oil & Supply Co., Boston, Mass., lubricants.
- Edison Storage Battery Co., West Orange, N. J., Edison storage batteries.
- Electric Speedometer & Dynamometer Co., Washington, D. C., Hopkins's electric speed indicators.
- Electric Storage Battery Co., Philadelphia, Pa., accumulators.
- Electric Vehicle Garage, Boston, Mass., electric vehicle literature.
- Empire Tire Co., Trenton, N. J., Empire tires.
- Empire Top & Windshield Co., Boston, Mass., tops and windshields.
- Ernst's Sons, C. F., Buffalo, N. Y., turntables.
- Fegley Tire Chain Co., Philadelphia, Pa., non-skid chains.
- Findeisen & Kropf Mfg. Co., Chicago, Ill., Rayfield carburetters.
- Firestone Tire & Rubber Co., Akron, O., Firestone tires.
- Fisk Rubber Co., Chicopee Falls, Mass., Fisk tires.
- Flentje, Ernst, Cambridge, Mass., hydraulic recoil preventer.
- Foster, Charles K., Centerville, R. I., C. K. F. shock absorbers.
- Gabriel Horn Mfg. Co., Cleveland, O., Gabriel horns and Foster shock absorbers.
- General Electric Co., Schenectady, N. Y., stationary lighting plants, motors and magnetos.
- Gibney & Bro., J. L., Philadelphia, Pa., solid tires and vulcanizers.
- Gilbert & Barker Co., Boston, Mass., underground gasoline storage systems.
- G & J Tire Co., Indianapolis, Ind., G & J tires.
- Goodrich Co., B. F., Akron, O., Goodrich tires.
- Goodyear Tire & Rubber Co., Akron, O., Goodyear tires.
- Gray & Davis, Amesbury, Mass., lamps and electric lighting specialties.
- Griffin, Geo. L. & Son., Boston, Mass., fur garments.
- Haines Measuring Pump Sales Co., Harrisburg, Pa., oil and gasoline storage systems.
- Harris Oil Co., A. W., Providence, R. I., lubricants.
- Hartford Suspension Co., Jersey City, N. J., Truffault-Hartford shock absorbers and Hartford auto-jack.
- Hartford Rubber Works, Hartford, Conn., Hartford tires.
- Haws, Geo. A., New York City, Panhard lubricants.
- Heinze Electric Co., Lowell, Mass., ignition and lighting specialties.
- Hillman Auto Supply Mfg. Co., Boston, Mass., brass and plated specialties.
- Hind & Co., H. L., Boston, Mass., Tyre-Lube powder.
- Hoffecker Co., Boston, Mass., Hoffecker speedometers.
- Holt & Bebee, Boston, Mass., lamps and electric specialties.
- Homo Co. of America, Jersey City, N. J., Homo carburetter.
- Hopewell Bros., Newton, Mass., tire and lamp covers.
- Hydraulic Oil Storage Co., Detroit, Mich., oil and gasoline storage systems.
- Indian Refining Co., Boston, Mass., Havoline oils.
- International Metal Polish Co., Indianapolis, Ind., Blue Ribbon metal polish.
- Kellom & Co., Chas. F., Boston, Mass., Invader lubricants.
- Keystone Lubricating Co., Philadelphia, Pa., Keystone lubricants.
- Kilgore Mfg. Co., Boston, Mass., Kilgore air shock absorbers.
- Kinney Mfg. Co., Boston, Mass., rotary pumps.
- K-W Ignition Co., Cleveland, O., ignition specialties.
- Knowles, C. S., Boston, Mass., Hartford tire pump.
- Leather Tire Goods Co., Niagara Falls, N. Y., adjustable tire treads and non-skid bands.
- Leland & Co., W. H., Worcester, Mass., Worcester spark coils and grinders.
- Lovell-McConnell Mfg. Co., Newark, N. J., Klaxon horns and Raiswell jacks.
- Lunt-Moss Co., Boston, Mass., stationary pumping and lighting plants.
- Marburg Bros., Inc., New York City, Mea magneto.
- Mason Co., Geo. H., Boston, Mass., Funnels and measures.
- McClurg Tire & Rubber Co., Boston, Mass., Jelco puncture-proof tires.
- McCue Co., Hartford, Conn., axles, etc.
- Meteor Gas Co. of New York, New York City, acetylene gas tanks.
- Michelin Tire Co., Milltown, N. J., Michelin tires.
- Milbury Steel Foundry Co., Milbury, Mass., nickel vanadium castings.
- Miller, Chas. E., New York City, supplies and specialties.
- Moore-Smith Co., Boston, Mass., fur garments.
- Morgan & Wright, Detroit, Mich., Morgan & Wright tires.
- Morrison-Ricker Co., Grinnel, Ia., gloves.
- Morse, J. L., Franklin, Mass., Brown's perfection inner tube.
- Motor Specialties Co., Boston, Mass., Bi-Plex pump.
- Motz Clincher Tire & Rubber Co., Akron, O., Motz tires.
- Murray, P. A. & Co., Newton, Mass., coachwork and Murray curtain-raiser.
- National Brake & Clutch Co., Boston, Mass., cork inserts.
- National Carbon Co., Cleveland, O., dry cells.
- Nesmith Co., C. I., Reading, Mass., cleaners and polishers.
- New England Distributing Co., Boston, Mass., Odin dry cells, Autoline oils, New York coils and "Faust" polishes.
- New York Safety Chest Co., New York City, storage receptacles.
- Norton Co., Worcester, Mass., carborundum wheels and grinding devices.
- Pantasote Co., New York City, top materials.
- Parker & Co., F. R., Boston, Mass., specialties.
- Pennsylvania Rubber Co., Jeannette, Pa., Pennsylvania tires.
- Post & Lester Co., Hartford, Conn., Stewart speedometers, Victor gas tanks, windshields, lamps, etc.
- Prentiss, Saml. L., Boston, Mass., vacuum cleaners.
- Randall-Faichney Co., Boston, Mass., Jericho exhaust horns, B-line grease guns and Bing spark plugs.
- Reliance Speedometer Co., Boston, Mass., Reliance speed indicators.
- Remy Electric Co., Anderson, Ind., magnetos and lighting specialties.
- Republic Rubber Co., Youngstown, O., Republic tires.
- Robinson & Son Co., Baltimore, Md., lubricants.
- Rome Soap Mfg. Co., Boston, Mass., oils, greases and polishes.
- Royal Equipment Co., Bridgeport, Conn., Raybestos friction fabric.
- Russell & Co., T. F., Boston, Mass., accessories, tools and supplies.
- Sage Trunk Co., Boston, Mass., trunks and suit cases.
- Salmon, John A., Boston, Mass., monograms.
- Sawyer Oil Co., Howard B., Boston, Mass., lubricants.
- Scheu-Dexter Mfg. Co., New York City, Scheu's high-low headlight controller.
- Shaler Co., C. A., Waupun, Wis., vulcanizers.
- Shannon, T. R., Hartford, Conn., polishes.
- Shawmut Tire Co., Boston, Mass., Shawmut tires.
- Sireno Co., New York City, Sireno horns.
- Smith Iron Co., G. W. & F., Roxbury, Mass., turntables.
- Splitdorf, C. F., New York City, ignition devices.
- Standard Thermometer Co., Boston, Mass., Standard speedometer.
- Standard Tire & Rubber Co., Boston, Mass., Imperial tires.
- Star Rubber Co., Akron, O., Star tires.
- Steel Cable Engineering Co., Boston, Mass., Acorn exhaust whistle.
- Stover Lang Co., Boston, Mass., speed and mileage meters.
- Stromberg Motor Devices Co., Chicago, Ill., Stromberg carburetters.
- Swinehart Tire & Rubber Co., Akron, O., Swinehart tires.
- Underhay Oil Co., Boston, Mass., lubricants.
- United Manufacturers, New York City, Jones speedometer, Weed chains, Soot-Proof plugs, Non-Fluid oils, etc.
- U. S. Lighting & Heating Co., New York City, storage batteries.

Vacuum Oil Co., Boston, Mass., lubricants.
Valvoline Oil Co., Boston, Mass., lubricants.

Veeder Mfg. Co., Hartford, Conn., odometers and speed indicators.

Victor Auto Supply Mfg. Co., New York City, supplies and specialties.

Voorhees Rubber Co., Jersey City, N. J., Rubber hose and packing.

Walcott, T. M., Boston, Mass., sweaters and caps.

Ward, Edgar T., Boston, Mass., tubing and tools.

Warner Instrument Co., Beloit, Wis., Warner autometers.

Wayne Oil Tank & Pump Co., Fort Wayne, Ind., oil and gasoline storage systems.

Welding Co., The, Boston, Mass., welding.
White & Bagley Co., Worcester, Mass., Oilzum lubricants.

Whitney Mfg. Co., Hartford, Conn., Whitney chains and keying systems.

Whitaker Chain Tread Co., Boston, Mass., Whitaker non-skid chains.

Wilkinson & Co., Boston, Mass., supplies and tools.

Williams & Co., J. H., Brooklyn, N. Y., forgings and wrenches.

Winship, W. W., Boston, Mass., trunks and Star tire and tool cases.

Rival Shows Stir Sioux City.

As the result of a little spat between the Sioux City local dealers and the out of town agents, that enterprising Iowa city last week "enjoyed" two separate shows, both of which ran for the full week between February 27th and March 4th. The trouble was over the matter of terms. The two organizations, the Sioux City Automobile Dealers' Association on one hand, and the Territorial Dealers' Association on the other, failed to agree as to the terms of a joint show, the result being that the former body had its show in the Auditorium, as originally scheduled, and the latter's occupied the Princess Rink. Both of the buildings were elaborately decorated for the occasion and both shows were liberally patronized.

For a Truck Parade in New York.

A parade, in which it is hoped several hundred motor trucks will take part, has been scheduled for Saturday, April 15th, by the Motor Truck Club, of New York City, and is expected to show the general public and to the manufacturers, merchants, contractors and other responsible dealers and business men who in the near future may become prospective purchasers of trucks for their respective businesses the great advance made by the commercial motor vehicle during the past 12 months. The parade will start from 80th street and go down Broadway, cross over to Fifth avenue, at either 59th street or 42d street, and turn up Fifth avenue and disband at 110th street, at the northern end of Central Park.

GOLDFISH AT KANSAS CITY SHOW

They Disport in Lake Which Forms a Decorative Feature—Display Attracts Crowds Despite Earlier Show.

Through the snow and slush thousands of visitors last week rode and drove—and a few sleighed—to the gardens and goldfish in Convention Hall, where, during the six days prior to and including the 4th inst., the fifth annual show of the Kansas City (Mo.) Automobile Dealers' Association was in full swing. Though this was the second automobile show to be held in that building within three weeks, the first being the function staged by the "insurgent" faction among the dealers, the attendance was not lessened on this account and the big hall was fairly well filled at all times with a crowd that fairly bubbled over with enthusiasm.

Included in the 71 makers of pleasure cars and trucks which were on view there were three, the Duryea Trivan, the Demot and the Fritchle electric, which were shown for the first time this year. The former is a three-wheeled quick delivery car and is the product of Chas. E. Duryea, of Reading, Pa. It is equipped with a single cylinder air cooled motor, which is connected to the third wheel positioned in the rear and over which the operator sits. The Demot, which is marketed by the Demotcar Sales Co., Detroit, Mich., is a runabout in the low-priced, light car class, and is equipped with a two cylinder opposed motor, water cooled by the thermosiphon system. Hailing from Denver, Col., where it is built by the Fritchle Auto & Battery Co., the Fritchle is, as its producers' name suggests, an electric, and is driven by a single five horsepower motor which is connected with the drive wheels by means of a chain. Several styles of body are supplied at the option of the purchaser and include victoria, coupe and roadster.

In the matter of decorations the show was even more complete than was last year's "majestic park of trees." Near the door, and forming the piece de resistance of the ornamentations, there was a large artificial lake stocked with goldfish and surrounded by ferns and water plants and other greenery. Overhead, luxurious curtains of a dark blue material resembling velvet were held in place by great gilt cords terminating in tassels and other fur-belowes, and served to hide the steel girders of the roof. The remainder of the decorations were very similar to those used in the previous show, the balconies and walls being covered with scenery representing Venetian landscape. A quaint feature of the arrangements was the location of the bandstand, which was in a sort of hanging

basket suspended from the girders in the center of the hall. The exhibitors were as follows:

Pleasure cars: Jackson Motor Co., Jackson; Hall Bros. & Reeves, Dorris; Kissel Motor Co., Kissel; Ryer Motor Co., Henry; Warren Motor Co., Warren-Detroit; Auto Livery Co., Speedwell; Midland Motor Co., Midland; William Motor Car Co., Locomobile; Inter-State Motor Co., Inter-State; Lake Motor Co., Stearns, Premier and Babcock electrics; Ohio Car Co., Ohio; Boyd Auto Co., Hudson; Regal Motor Co., Regal; Franklin Motor Co., Franklin; Franklin Nichols, Fiat; Bond Motor Car Co., Everitt; Hunniwell-Scott, Lozier. Pope-Hartford and Stanley steamers; Kendall Motor Car Co., Halladay and Pennsylvania; Broadway Carage Co., Moline; Missouri Valley Auto Co., White steam and gasoline cars; Brooke Auto Co., Lexington; Parry Auto Co., Parry; Bergdoll Auto Co., Bergdoll; Kelly Motor Co., Cutting; Auburn Motor Co., Auburn; La Motor Co., La; Otto Motor Co., Otto; Petrel Motor Co., Petrel; Eagle Garage Co., Elmore; Geo. W. Davis Car Co., Davis; Staver-Chicago Co., Staver-Chicago; Cino Auto Co., Cino; Schacht Motor Car Co., Schacht; Lambert Motor Car Co., Lambert; Victor Motor Car Co., Victor; Pratt Elkhart Motor Co., Pratt-Elkhart; Great Western Auto Co., Great Western; Cartercar Co., Cartercar; Kellogg-Snow Motor Co., Duryea Tri-Car; Metz Motor Car Co., Metz; La Port Carriage Co., Demot; Northwestern Garage Co., Haynes; Westcott Motor Car Co., Westcott; Fritchle Electric Co., Fritchle electrics; Monarch Motor Co., National; Krit Motor Car Co., Krit.

Commercial cars: Missouri Valley Auto Co., White; F. J. Rhode, Monitor; Seitz Motor Truck Co., Seitz; Ideal Motor Truck Co., Ideal; Economy Truck Co., Economy; Kelly Motor Truck Co., Gramm; W. R. Sober Truck Co., Kelly and Federal; Bond Motor Car Co., Hewitt; Franklin Motor Car Co., Franklin; Overland Auto Co., Overland.

Accessories: Auto Supply Co., Kansas City Battery Co., Polson Wind Shield Co., Troy Wind Shield Co., L. J. Long, Dahl Punctureless Tube Co., Polson & Hilton, Dorian Rim Co., Avery Portable Light Co., Typhoon Signal Co., Regent Tire Co., Conant & Donaldson Racine Auto Tire Co., Standard Oil Co., Holcker & Elberg, Simons Auto Top Co., E. B. Sauffley, Sellers & Berry, Thor Motorcycle Co., King Leather Co., Perfection Tube Co., Wayne Tank Co., Fidelity Oil Co., Fawler & Martin, Star Brass Co., Hagstrom & Co., Keystone Oil Co., India Rubber Co., Universal Tire Protector Co., Southwestern Auto Supply Co., Red Seal Battery Co., Butler Mfg. Co., Pitless Turntable Co., Columbia Steel Tank Co., Delasy Supply Co., Fowler & Long, Kansas Auto School, Alpha Floral Co.

HIGH JINKS AT INDIANAPOLIS

Two Parades, Egg Races, Drifting Races and a Disrobing Contest Make "Show Week" an Eventful One.

Terminating with a dinner given by the Indianapolis Automobile Trade Association in the Hotel Denison, Indianapolis's "show week" was drawn to a close on Saturday last, 4th inst. The festivities held in conjunction with the exhibition reached the height of their glory on Tuesday night in the mammoth Mardi Gras automobile parade which wended its way over a line of march approximately seven miles in length and lined by crowds of spectators. In the artistic division of the parade the prize for the most beautifully decorated car went to the Buick company's coach, which had almost lost all semblance to its original form under the mass of pink and white blossoms with which it was covered. A Waverley coupe, brilliantly illuminated with hundreds of miniature incandescent lamps and carried in state on a big motor truck, qualified, in the estimation of the judges, for second prize. Though but two prizes were given in this division, the International Metal Polish Co.'s floral car, which led the decorated cars, came in for a share of the glory, and by a special dispensation received honorable mention.

In the other division, comprising unusual, humorous and grotesque "floats," first prize was awarded the Hearsey-Willis Co. The car which won the prize was a Mitchell touring car, over which a superstructure representing a trolley car and bearing the legend "Mars Hill Rapid Transit," had been built. The winner of second honors in the unique division was the Studebaker Automobile Co., which presented a "float" carrying a troupe of colored plantation singers. There were a large number of other "floats" in the unique division, but the ones which attracted the most attention was the Willys-Overland exhibit, which was the largest in the parade. Twelve vehicles in all were used, and represented circus wagons, on which were mounted all sorts of burlesque freaks and animals. Another of the striking "floats" in the unique division was the one exhibited by the Ford company, the significance of which, if lost on the general public, was none the less appreciated by the trade. On the platform two effigies representing the Ford and Selden interests were shown in the positions and garb of prize-fighters, the former, of course, being the victor, who stood gloating over the other. A sign depending from the "ring" conveyed the information that the Selden patent is "down and out" and "can't come back."

The fancy driving contests and other "high jinks," which were held on Wednes-

day, were not run off on the Speedway, as originally scheduled, the field of operations being changed to Indiana avenue at the last minute on account of bad weather. Rings were substituted for apples in the apple spearing contest, the competitors being required to remove six rings from as many supports and carry them to the finish line on the spear which was provided for the purpose. B. C. Bronson, driving an Overland entered by the Willys-Overland Co., made the best score of the 14 who tried, and speared three rings in 29½ seconds. Meddock, driving an Empire "20," entered by the Empire Motor Car Co., also succeeded in dislodging three of the rings, but required 31½ seconds to do it, and therefore received second prize. Third prize went to C. A. Smith, who drove a Marmon, entered by the Nordyke & Marmon Co., and who consumed 36 seconds in capturing the three rings which were placed to his credit.

The disrobing contest which followed also brought out a large field of entrants, included in which there was one lady driver. The contestants were required to start from a designated place, and after having made several stops and left part of their wearing apparel at each, to return to the starting place, picking up and donning their garments in the reverse order in which they were discarded, the driver covering the course in the shortest time being adjudged the winner. Needless to say, the contestants were permitted to retain considerably more clothing than the law necessitates, but the race was none the less exciting, and was won in handy fashion by B. C. Bronson in the same car with which he won the former event. His time was 3:12½. H. Discher, who had charge of a Ford, entered by the Ford Motor Car Co., was more lucky in this contest than he was in the other, and succeeded in annexing second honors by completing the course in 3:30½. Driving a Flanders "20," entered by the Studebaker Automobile Co., C. B. Pierce was third, his time for the event being recorded as 3:32.

When it came to the egg and spoon race the committee decided not to take a chance, and substituted tennis balls for the eggs, the spoons and balls being carried by ladies who rode with the drivers. Miss K. Fertig, riding with E. L. Willsey in a Pope-Hartford, entered by the Frank P. Fox Co., won first place, making the race over the obstacles and among the barrels placed on the course in 53 seconds. She dropped the ball once, however, which entailed a penalty of one second, making the total time 54 seconds. Mrs. Earnest Dawson, in a Premier driven by W. McK. White and entered by the Premier Motor Co., was second in 55½ seconds, and Mrs. B. Woods, in a Brush, driven by A. Harnishfeger, was third in 57 seconds.

In the obstacle race the contestants were required to touch six barrels without over-

turning them, the *modus operandi* being to touch one of them first with either of the front wheels and then to back up and touch one of the others with one of the rear wheels, this "stunt" being repeated till all the barrels had been touched. It was run off in two divisions, one for cars equipped with sliding gears and the other for cars with planetary gears. In the latter division eight barrels were used. Bert Corbett, driving an Overland, entered by the Fisher Auto Co., was first in his division, completing the event in 1:09. Second prize went to C. B. Pierce in the same Flanders "20" with which he got third in the second event. His time was 1:12½. A. Harnisher, at the wheel of a Brush, was the only contestant in the planetary division, and, of course, obtained first prize, his time being 1:36¾.

Frank B. Willis, who drove a Studebaker electric, entered by the Studebaker Automobile Co., was returned the winner in the drifting or coasting contest open to electric vehicles only. A Detroit, entered by the Archey-Atkins Co., with E. R. Vincent at the wheel, was second, and a Baker, entered by the Fisher Auto Co., with Baker driving, was third. At the wheel of a Chalmers, Miss Helen Donson, the erstwhile queen of the Mardi Gras parade, easily won the fancy driving contest for women. Miss Garstang, in a Marmon, was second, and third honors went to Miss Bessie Hilton, who drove a Cole "30" in a clever manner.

The human craving to smash something, prevalent at times in the minds of some persons, was gratified to a certain extent in the last event on the slate, a contest for commercial vehicles. Numerous toy balloons were placed at intervals along the course, and the drivers were required to guide their cars squarely over them and break them. The event was not as easy as it looked. It was won by R. A. Arnold, who drove his Overland truck over two of the balloons and covered the course in 39 seconds. M. Kelley, driving a Frayer-Miller (Kelly) also succeeded in breaking two of the balloons, but failed to better the time made by Arnold, the result being a tie for first place. None of the other contestants, of which there were six, were able to break any of the balloons, and the next place went to E. H. Sutherland, who drove a Detroit electric over the course in 42 seconds.

Another mammoth parade on Friday, similar to the one on Tuesday except that the pleasure and commercial cars comprising it were wholly undraped and appeared in their natural dress, followed practically the same route as its predecessor, only at a much slower pace. The banquet given on Saturday, the last day of the show week, in the Hotel Denison, was the closing function of a week's gaieties which were unprecedented in the annals of Indianapolis automobile affairs.

CANADIANS DISPLAY THEIR CARS

Native Productions Closely Resemble the American Automobiles Which Constituted Bulk of the Toronto Show.

The second of the Canadian shows, which was held in Toronto under the auspices of the Ontario Motor League, was closed on the 4th inst. after a successful week's run. The exhibition was housed in the Armories, which is not, as its name might imply, more than one building, but is so styled because it serves as the headquarters for several regiments of the Canadian militia.

Though several of the products—the Jules, Guy, Harding, Brockville and Canada cars among them—included in the 36 exhibits of pleasure and commercial cars on view are native to the Queen City, or other Canadian metropolises, little of novelty was evident, the suggestion of American inspiration prevailing in each case. With the exception of the Russell, which is built by the Canada Cycle & Motor Co., and which employs Knight sliding valves, nothing radical was uncovered, the cars differing only in minor structural details from the standard American automobiles. The Knight engine itself is an American idea, though the Russell car as a whole is Canadian. Three of these cars were exhibited, a seven passenger closed-front touring model with a 38 horsepower motor having cylinders $4\frac{1}{2} \times 5\frac{1}{2}$, a five passenger closed-front touring car with a 26 horsepower motor with cylinders $4 \times 5\frac{1}{2}$, and a five passenger touring car with a $3\frac{3}{4} \times 5\frac{1}{2}$ motor rated at 22 horsepower.

Among such well known commercial vehicles as the White, Mack, Randolph, Reliance and others, there was but one Canadian truck, the product of the Canadian Commercial Motor Car Co., of Windsor, Ont. As in the case of the pleasure cars, the "Canadian" truck differs but slightly from the makes of commercial vehicles in the United States which are in its class. A two cylinder opposed engine rated at 22 horsepower is used and with an open express body the capacity of the car is 1,800 pounds. The cylinder dimensions are $5\frac{1}{4} \times 4$ inches, the motor being equipped with Remy magneto ignition and thermosiphon cooling. A two-speed planetary gear set is used and double chain drive.

In spite of the comparatively large amount of space available in the big building, the management was hard pressed to find room for all the exhibits, many of which were placed at the last minute in booths built for the purpose. The interior of the hall, usually of the most somber appearance, was transformed into a blaze of light. Overhead in the galleries and on the side walls, miles of red, white and blue

bunting were festooned and powerful arc lights served to make the place almost as light as day. The list of exhibitors is as follows:

Pleasure cars: Warburton Bros., Maxwell; J. I. Case Threshing Machine Co., Case; Ontario Motor Car Co., Packard; E-M-F Co. of Canada, E-M-F and Flanders; A. E. Wilson, Jackson; T. Eaton Co., Ltd., Chalmers; Abbott-Detroit Motor Car Co. of Canada, Abbott-Detroit; Imperial Motor Car Co., Oakland and Oldsmobile; Hyslop Bros., Cadillac; Ford Motor Co. of Canada, Ford; Auto Supply Co., Pierce-Arrow, Stoddard-Dayton and Hupmobile; Reo Motor Car Co. of Canada, Reo; White Co., Ltd., White; Dominion Automobile Co., Peerless, Stevens-Duryea and Napier; McLaughlin Motor Car Co., McLaughlin-Buick and Rauch & Lang electrics; Canada Cycle & Motor Co., Russell; Tudhope Motor Co., Ltd., Everitt; Gibson Electric Carriage Co., Babcock electrics; Canadian Vehicles, Ltd., Detroit electrics; Jules Motor Co., Jules; Matthew Guy Carriage Co., Guy "30"; Ross Motor Car Co., Marmon; Winton Motor Car Co., Winton; H. J. Balfour, Baker electrics; Canada Carriage Co., Ltd., Brockville "30"; Canadian Motors, Ltd., Canada; Hamilton Machinery Co., Inter-State; Shaw-Overland Sales Co., Overland; International Harvester Co., International; Gibbons & Flint, Brush; Harding Machine Co., Harding.

Commercial cars: Canadian Vehicles, Ltd., Lansden trucks; Commercial Motor Car Sales Co., Gramm trucks; White Co., Ltd., White trucks; Dominion Automobile Co., Ltd., Mack trucks; McLaughlin Motor Car Co., Ltd., Randolph and Reliance trucks; Canadian Commercial Car Co., Canadian trucks.

Motorcycles: Canada Cycle & Motor Co., C. C. M.; Militaire Motor Co., Militaire; Canadian Agencies, Wagner; S. J. Vogan, Minneapolis; W. H. Dunne, Thor; Motorcycle and Equipment Co., N. S. U.; Lemon & Co., Indian.

Accessories: Electrical Specialties, Ltd., supplies; General Accident Insurance Co., insurance; Cutten & Foster, tops; Chadwick Bros., lamps and accessories; Dominion Auto Co., Republic tires; W. H. Dooderham, Ltd., Palmer tires and supplies; Goodyear Tire & Rubber Co. of Canada, Goodyear tires; Canada Cycle & Motor Co., supplies; Dunlop Tire & Rubber Goods Co., Dunlop tires; S. F. Bowser & Co., gasoline and oil storage systems; Auto Tire Co., Goodrich tires; Canadian Consolidated Rubber Co., Canadian tires; Croftan Storage Battery Co., Vulcan storage batteries; Queen City Oil Co., lubricants; Gutta Percha & Rubber Co., Fisk tires and Weed chains; Leather Tire Goods Co., Adjustable treads and non-skid bands; John Millen & Sons, supplies; Diamond Rubber Co., Agency Diamond tires; Commercial Oil Co., lubricants; Stepney Motor Wheel of Canada, Stepney wheels and tires;

Chapman Double Ball Bearing Co., parts; Kempshall Tire Agency, Kempshall tires; Canadian Timetest Tire Co., tire specialties; Sharpe Sales Co., jacks; J. P. Holden Rubber Co., Morgan & Wright tires; McCord Mfg. Co., radiators and lubricators; National Equipment, Wayne storage tanks; National Carbon Co., dry cells; Bosch Magneto Co., Bosch magnetos; Marine Construction Co., marine motors; Schofield-Holden Machine Co., marine engines; Tate Accumulator Co., storage batteries; Zimmer Mfg. Co., accessories; Canadian Knowles Co., accessories; Motor Sundries, supplies; Sherman-Cooper Co., marine engines; Auto Tire Repair Co., tire specialties; Rubber Tire Goods Co., tire repair materials; International Metal Polish Co., metal polish; Garlock Packing Co., lubricants; Ontario May-Oatway Co., Pyrene fire extinguishers; Canadian Carbon Co., dry cells; Marvin Specialty Co., Cinch tire plugs; Connor Rudy, supplies; Toronto Motorcycle Club.

Harrisburg's Show Staged in Car Barn.

That even as plebeian a place as a car barn may be transformed into a social center was demonstrated last week in Harrisburg, Pa., where, during the week ending the 4th inst., the second annual show of the Harrisburg Automobile Dealers' Association held forth in the sheds where on less auspicious occasions the trolley cars of that Pennsylvania city are housed. The barn was really the only building in town which was large enough to accommodate the 26 makes of cars embraced in the exhibits of 10 local dealers and was prettily decorated with flags and vari-colored draperies.

With the exception of the Boss car, a new steam creation hailing from Lebanon, Pa., where it is built by M. M. Zeller, all of the products on view are familiar to the motoring public and nothing new was uncovered. Accessories were shown by four of the space holders, the complete list of exhibitors being as follows:

Automobiles: Crispen Motor Car Co., Cadillac; International Harvester Co., International pleasure and commercial cars; Ideal Motor Car Co., Kline; East End Auto Co., Oldsmobile, Overland and Velie; Keystone Motor Co., Chalmers, Pullman and Hupmobile pleasure cars and Kelly trucks; Ensminger Garage, Mitchell and Brush; Andrew Redmond, Maxwell, Columbia, Regal and Columbus electric pleasure cars and Alden-Sampson commercial cars; Central Pennsylvania Auto Co., Hudson and Inter-State; Harrisburg Automobile Co., Reo, Rambler, National and Winton pleasure cars and Mack and Hart-Kraft commercial cars; M. M. Zeller, Boss steam cars.

Accessories: Miller Rubber Co., Miller tires; Keystone Lubricating Co., Keystone grease and oils; Atlantic Refining Co., lubricants; Jos. W. & Wm. S. Essick, insurance.

WHEN UNCLE SAM STOPPED NEVADA

Western State Once Tried to Tax Travelers but Supreme Court Intervened—
Precedent for Federal Registration.

Although it served no purpose and though it must be reintroduced into the next congress, the fact that the Federal automobile registration bill was reported out of committee by the congress which just expired renewed the discussion of its constitutionality. Among others, someone in the Automobile Club of America, using Secretary Forsdick as a phonograph, poured cold water on the bill by issuing a long statement declaring it unconstitutional and claiming to have arrived at this opinion after consultation with the legal advisers of the club. When Counselor Charles T. Terry, author of the bill, heard what Mr. Forsdick was quoted as saying, he expressed himself surprised and retorted that the bill had been drawn so carefully that were it enacted there would be small chance of its being declared unconstitutional.

"When the congressional committee first took up the matter," Mr. Terry said, "they went at it gingerly, but finally became interested. The bill was referred to a sub-committee of five—all lawyers, representing widely separated parts of the country. Irving K. Wagner, of Pennsylvania, was its chairman. For eight months we were in conference with this committee of lawyers, and went thoroughly into the expediency, legality and constitutionality of the measure. We went through the bill paragraph by paragraph. After we had decided that it was letter-perfect and sound, this sub-committee adopted the bill as its own bill, and introduced it, favorably under the name of its chairman, to the full committee of 18 members. And the latter, on Monday, reported it favorably to the House. In other words, this bill has been under consideration for more than two years by lawyers, and there is no reason why there should be a single flaw in it."

The Springfield (Mass.) Republican, in discussing it editorially, takes up the question of constitutionality and proves at the hand of precedents that this bill probably will be declared constitutional, should the argument ever come before the United States Supreme Court at Washington. Reviewing the attempts to have a federal license bill passed, the Republican continues:

"It is generally assumed that if Congress has the power to impose Federal licenses to the exclusion of all except a single State license, that power arises under the clause relating to the regulation of interstate commerce. But it is urged that interstate commerce relates to merchandise and not persons, and if to persons also, then not to persons moving about for pleasure

in their own vehicles. Moreover, does the congressional power to regulate interstate commerce extend to the displacement of a State power to tax or license vehicles within its own borders and using its own streets and highways, for the regulation of traffic thereon and recovering for the wear and tear inflicted? Has it not just been decided by the Federal courts in New York that New York City may exact licenses of express wagons carrying articles of interstate commerce, in common with other vehicles using the streets, as an exercise of the police power for the regulation of street traffic? Here are recognized limitations upon the extent of the exclusive congressional power to regulate interstate commerce, which the pending automobile bill might seem to overlap.

"Still, such a law might easily find judicial indorsement under the interstate clause of the constitution, for it has become pretty well settled that persons, as railroad passengers, for example, are as much articles of commerce as merchandise; and it may not be affirmed that travel for pleasure makes a person any less a subject of interstate commerce than travel for business; nor may it easily be said that an essential difference is created by the matter of ownership of the vehicle used in travel."

In this connection it is brought out that as long ago as 1867 a case was argued in the United States Supreme Court, which involved the right of a State to tax interstate travelers in coaches and other vehicles. This case, which promises to be quoted frequently in the near future, and which undoubtedly will have an important bearing upon the constitutionality of the proposed federal license law, is the one of *Crandall vs. the State of Nevada*, in which Nevada imposed a capitation tax of \$1 for every passenger going through or leaving the State by a public carrier, railroad or stage coach. A minority of the court, including the Chief Justice, held that the tax should have been outlawed exclusively on the ground of its inconsistency with the power of Congress to regulate interstate commerce; but a majority of the court, under the lead of the great Justice, Samuel F. Miller, set aside the tax, not on that ground at all, but because it was an interference by the State with the free movement of citizens throughout a common country, and this tended to impede the Federal Government in the performance of its legitimate functions and to defeat the purposes for which it was organized. The court said:

"So in the case before us it may be said that a tax of \$1 for passing through the State of Nevada, by stagecoach or by railroad, cannot sensibly affect any function of the Government, or deprive a citizen of any valuable right. But if the State can tax a railroad passenger \$1, it can tax him \$1,000. If one State can do this so can every other State. And thus

one or more States, covering the only practical routes of travel from the East to the West, or from the North to the South, may totally prevent or seriously burden all transportation of passengers from one part of the country to the other."

"While it may now be urged that vital distinctions are to be observed between this case and any that might arise under a Federal automobile license law—that a tax on passengers is one thing and a tax on vehicles is another; and a tax on persons traveling by public conveyance is to be distinguished from a tax on private conveyances or people therein—yet it may easily be seen that, with the great spread of travel and movement of goods by automobile, a situation might and would arise making applicable the broad considerations presented in *Crandall vs. Nevada* to the independent exercise by each State of the power to impose any burden within its pleasure upon automobiles passing into or through it from other States."

Three Suits Follow Hired Car's Accident.

Damages aggregating \$25,000 are being sought by the victims of an automobile accident which occurred on Elmwood avenue, Providence, R. I., April 28th, 1910. The peculiar feature of the suit, which has been brought in the superior court in Providence, is that both the occupants of the automobile and the driver of the milk wagon with which the motor car collided demand damages from the owner of the automobile, who maintains a garage and lets automobiles for hire. The complaint states that the chauffeur was furnished by Clarence M. Benson, owner of the car, that this chauffeur operated the car so carelessly as to cause a collision with the milk wagon, in which the occupants of the car and the driver of the wagon were seriously injured. The driver, E. W. Pickering, asks \$15,000; Morris Green, who hired the car, wants \$4,000, and Patrick Carrigan, the other occupant, demands \$6,000 for injuries.

To Reduce Chauffeurs' License Fee.

The bill to reduce the cost of chauffeur-ing in New York state has been introduced into the legislature, but it reduces only the cost of renewals, the original license fee remaining at \$5. As originally framed, the amendment which now is pending proposed to reduce the renewal from \$5 to \$1, but, at the instance of the Secretary of State, the latter sum was doubled. According to that official, it costs the state \$1.25 to renew a license. The Ferris bill, introduced at the instigation of the so-called Chauffeurs' Federation of America, of Utica, N. Y., which proposes that all owners and whoever else may touch a steering wheel shall be classed as chauffeurs, has made no progress and, according to trustworthy information, if it ever is reported out of committee it will be recommitted and put to sleep.

GREAT GROWTH OF RUBBER DEMAND

Tire Manufacturers Now Use 60 Per Cent. of World's Supply—Why Yield Will Increase Slowly.

There is not at the present time that universal excitement over crude rubber matters that existed a year ago when rubber was quoted at \$3 a pound, when it looked as if the motorist would have to sell his car to buy his tires, when rubber bands looked out of place on any desk not made of solid mahogany, and when wet feet stared everybody in the face. At that time the matter assumed such importance that the daily press recklessly encroached on its police and sporting space to talk about the rubber situation, says the *India Rubber World*.

The excitement has in the interim materially subsided. Rubber is now selling nearer to its normal figure, with a comfortable world supply of 6,000 tons, and a "famine" is no longer imminent. But with the constantly widening space that manufactured rubber is occupying in modern life, the question of an adequate supply of crude material is always interesting. Sixteen years ago the entire annual rubber supply of the world amounted to 35,000 tons, of which about one-half, or 17,000 tons, came to this country. Seventy per cent. of that was used in the manufacture of rubber boots and shoes, the rest going into a miscellaneous assortment of rubber goods. The amount of rubber consumed in the manufacture of tires was almost negligible, certainly not reaching 5 per cent. But all that is changed, and while we received in this country last year about 42,000 tons of rubber, 60 per cent. of that went to the tire manufacturers, and the rubber footwear men, manufacturers of mechanical goods and druggists' sundries, and all the others together, only got 40 per cent. of the rubber imports.

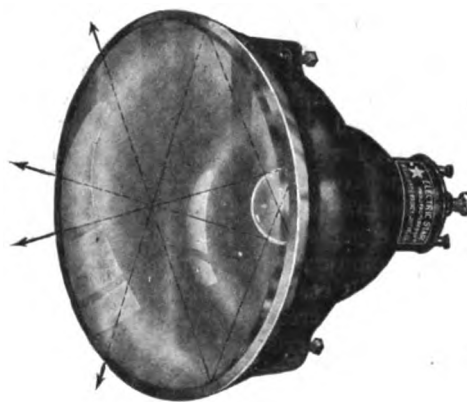
The demand for articles of all kinds manufactured from rubber has increased with every year, and the demand for tires has grown with great rapidity, while the supply of crude rubber has increased very slowly. For instance, the consumption of tires in 1908 increased 150 per cent. over the preceding year, and in 1909 showed a still further increase of 100 per cent., while during those same years the crude supply increased only 5 per cent. each year. While during the year just closed the demand for tires decreased slightly from what it was in the previous year, this condition is obviously only temporary. The automobile has now taken its place among the necessities of life—food, raiment and shelter being relegated to the luxuries—so no permanent relief can be expected from a diminished demand for tires, nor is it at all

likely that people are going to use fewer hot water bags or wear fewer rubber boots. If there is any relief it must come from an increased crude rubber supply.

Now the outlook is that there will be an increased supply, but that it will come

Light that Illuminates Whole Road.

To assist in preventing those night accidents which happen at curves and crossings and which are due to failure of the light to project to the right or left, in the line of direction the car is going, has been in part responsible for the production of the Electric Star Headlight, by the Milwaukee Bronze Casting Co., of Milwaukee,



Wis., which is shown by the accompanying illustration.

Behind the light is a perfect parabola which projects an intense ray of white light, about 3,500 candlepower, onto the road ahead. When passing from the lamp this intense ray is mirrored and reflected by a combination reflector, casting a diffused light all over the road, with the intense light focused dead ahead, as the accompanying illustration shows. The lamp itself is made of thick, non-corrosive, silvered aluminum, no other sheet metal being used, and there is no soldering of parts. The equipment of all headlights is a Mazda bulb, in 10, 16, 20 or 25 candlepower, as desired, and the consumption of current is from 1.5 amperes per hour for the 10-candlepower to 3.7 amperes per hour by the 25-candlepower lamps. The manufacturers claim that their cost of running by storage battery is one-fourth to one-third that of carbon or gas.

slowly. Of the 73,000 tons of crude rubber produced last year, 38,000 tons came from Brazil. That is, of course, all wild rubber, gathered along the tributaries of the Amazon. It is estimated that only one-tenth of the possible rubber supply of Brazil has ever been tapped. If this is true, there are 400,000 tons of excellent rubber along the Amazon which could be taken out each year. But the difficulties are so great—the necessity of employing only native labor, the great expense of equipping

rubber-gathering parties and the primitive methods that still obtain—that it is extremely questionable whether the supply from that quarter will materially increase for some years. In the past 15 years the output from the Amazon has increased at the rate of about 6 per cent. a year. Undoubtedly with the increased incentive of higher prices, the production will grow more rapidly, but hardly more than 10 per cent. a year.

Over a quarter of the rubber supply, or about 18,000 tons a year, comes from Africa, but there is little likelihood of any increase from this quarter, both because of the suicidal policy of destroying the vines in order to get the rubber and because the more humane methods now employed in the Congo are not likely to be as productive as the exacting, not to say, barbarous practices which are said formerly to have been in vogue. As a matter of fact, the supply from Africa decreased during the past year.

The largest increase in rubber production will undoubtedly come from the plantations in Ceylon and the Straits Settlements. This rubber has but recently become a factor in the situation. Four years ago only a few hundred tons had ever been exported from the Far East. In 1910 the exports from this region amounted to 10,000 tons. It is expected that the present year will see this increased to 15,000 tons, and men familiar with the situation in Ceylon and the Malay Peninsula predict that there will be a further increase of 3,000 or 4,000 tons a year for the next ten or twenty years.

The product of the Guayule shrub of Mexico amounted last year to 15,000 tons, but as the shrub is destroyed in extracting its latex and as it has not yet been proved whether it can be readily and quickly reproduced, this Mexican product is an uncertain factor in estimating future supplies. The immediate available increase must come, therefore, from the Amazon and the Far East, the two making a combined annual increase, for the next few years, of about 8,000 tons, or a trifle over 10 per cent. of the world's present supply.

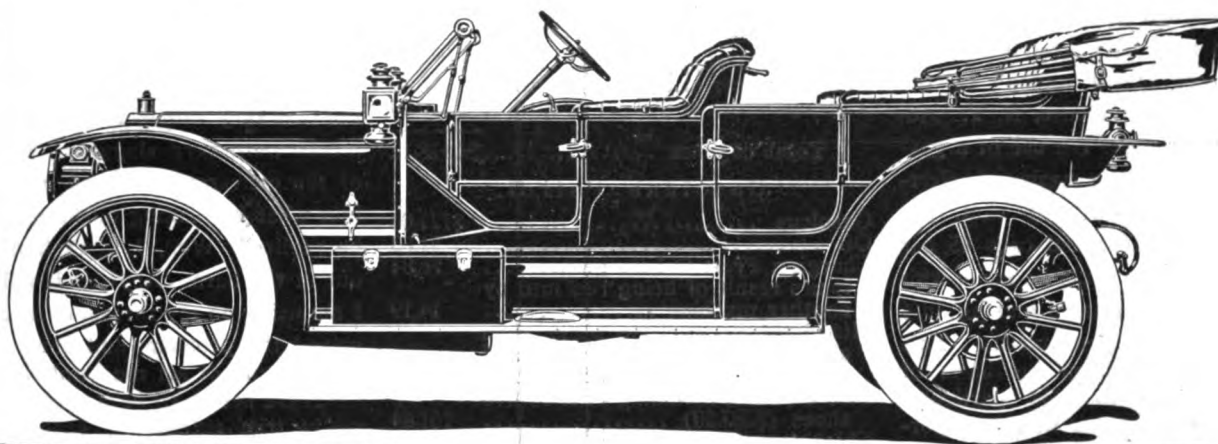
With the present constantly increasing demand it is fairly obvious that plentiful rubber is a condition not likely to be realized in the immediate future. Five years from now, when the plantations now in their infancy—or perhaps more properly in their adolescence—have reached a productive age, the story may be different.

About Filling Acetylene Generators.

As lump carbide expands under the chemical action caused by water, acetylene generators never should be filled over two-thirds full. Burner tips may be cleaned by forcing compressed air from a pump or tank through them, or possibly by picking out the carbon or other dirt with a needle.

Rambler

Motor Cars



Rambler
Sixty-five
Toy Tonneau

Forty-inch
Wheels

IF you drive a Rambler the pleasure of your outing is not converted into drudgery by tire trouble. The Rambler is the only American car equipped with the Spare Wheel. Fitted with a perfect inflated tire, it may be quickly and easily changed for a wheel with a damaged tire. No tiresome pumping in the hot sun or cold rain and you avoid the dirt so disagreeable to the well groomed. This eliminates worry about tire trouble which so often mars a trip. Every feature of the Rambler is designed for the owner's comfort, safety and convenience. The Offset Crank Shaft enables you to throttle down on high gear no faster than a man usually walks; to glide along quietly in crowded traffic without frequent gear shifting and obviates the necessity of rushing the hard pulls through sand and up grades. The Straight Line Drive saves power; big wheels and tires give added comfort and tire economy; the brakes are large enough to provide a feeling of security and the safety starting device protects you from injury while cranking.

A telephone message to the nearest Rambler representative will bring a Rambler to your door for inspection. A postal will bring you the new catalog.

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ECONOMY OF MOTOR POLICE WAGON

Official Figures that Make Horse Service Appear Almost Prohibitive—Saving Equals 37 Per Cent.

Additional evidence of the manner in which up-to-date municipalities are succeeding in, figuratively speaking, "turning a profit" on the handling of their appropriations is afforded by figures showing the advantages that have been gained by the use of motor patrol wagons by the police department of Syracuse, N. Y. According to recent reports the use of a gasoline patrol has been the means of effecting an economy of 37½ per cent. per month, making the individual calls 45 per cent. cheaper than they could be made with horse-drawn wagons and also making 10½ per cent. more calls per month. This means, in a word, that on the basis of former requirements in this particular branch of city service, the new transportation arrangement is yielding a virtual profit of 37½ per cent.

The motor patrol, an 18 horsepower Franklin, air-cooled machine, costs per month an average of \$258.54. This figure includes all maintenance and operating cost including operators' salaries and one repair bill necessitated by damages caused by the collision of another vehicle with the wagon; and it is "balanced" as to conditions at different seasons of the year, being drawn from costs extending over a period of 28½ months, during which the machine has been in service. As against the average monthly cost of the motor car, the old, horse-drawn equipment cost on an average \$414.34 per month.

The motor vehicle makes an average of 341 calls per month at an average cost of 75 cents, while the horse-drawn made 308 calls per month on the average, at a cost of \$1.34. The average daily mileage of the motor car is 25. The cost per mile, therefore, is something upward of 34 cents—which indicates that there are possibilities of still further reducing the net expenditure for service. The average daily travel of the preceding equipment never was ascertained. The results obtained with an electric vehicle that was used previous to the installation of the gasoline car were intermediate between those obtained with the original horse haulage and the gasoline car. The service of this machine averaged 307 calls per month at a cost of \$1.17 each.

The following summaries show the comparative costs of maintenance of the three styles of service that have been used on a basis of average yearly cost:

comparative costs of maintenance of the three styles of service that have been used on a basis of average yearly cost:

Horse-Drawn Patrol.

Feed and bedding.....	\$703.00
Veterinary fees	68.50
Horse shoeing	237.65
Supplies	543.04
Three drivers at \$75 per month....	2,700.00
One stableman	720.00

Total expense\$4,972.19

Electric Patrol.

Repairs and supplies.....	\$1,978.12
Chief operator at \$75 per month....	900.00
Two operators at \$60 per month....	1,440.00

Total expense\$4,318.12

Gasolene Patrol.

Gasolene	\$121.04
Oil	51.83
Charging Prest-O-Lite tank.....	76.84
Repairs result of being run into by another machine	14.19
Miscellaneous expense other than above, including painting and general overhauling (\$207.62)....	155.82
Tire expense, including cost of five shoes (\$283.30)	161.84
Chief operator at \$80 per month....	959.99
Two operators at \$65 per month....	1,559.99

Total expense\$3,102.44

One important phase of the new service which the figures cannot indicate is the facility and promptness with which calls are responded to. The ability to reach a point of call in a minimum of time, while not as vital in the work of the police as in the case of fire department service, nevertheless is exceedingly important. An instance in point is related of the Syracuse department.

On one occasion the police received a telephone report that a man was attempting to dispose of a bicycle at a saloon half a mile from headquarters. At that time a long series of bicycle thefts had greatly annoyed the citizens and the police were doing everything to catch the thief. As soon as the call was received the motor was cranked, a detective jumped into the car and before the man could complete the sale of the bicycle at the saloon the detective was there and had both the man and the stolen wheel. On its run the car went a distance of half a mile or more through the streets of heaviest traffic and made three turns on the way.

It is in the comparative service in the matter of calls, however, that the true value of a good automobile equipment is best demonstrated. The actual service rendered by the three styles of equipment which the Syracuse police have employed is shown by the following table of comparative figures:

Horse-Drawn	Electric	Gasolene
3,706	3,685	4,092
308	307	341
\$4,972.19	\$4,318.12	\$3,102.44
414.34	359.84	258.54
1.34	1.17	0.75

TROUBLES CAUSED BY POOR OILS

Despite Urgings, Owners Still Fail to Realize Importance of Proper Lubricants—Iowa Farmer as an Example.

"I think one of the most amusing incidents of my recent trip in the West," said F. L. Holmes, sales manager of the Jackson Automobile Co., Jackson, Mich., "was when I was talking to a man out in Iowa, who had but recently purchased an automobile. He complained that the motor was not working satisfactorily, that its movements were very sluggish. In the course of the conversation I had occasion to ask him what lubricating oil he was using, and he replied: 'Well, I don't know; I got it out in the barn. Anyway it's the same oil I am using on my threshing machine.' This solved the problem, and amusing as it all was, it sort of set me thinking."

"There seems to be a mistake in what is really true automobile economy. I have seen a great many enthusiastic motorists who were not satisfied with their car until they had every piece of equipment on it that the accessory manufacturer produces, and who yet appeared to think that 'any old lubricant' was good enough for their motors, the most vital part of the entire automobile construction. They do not appear to realize that the success or the failure of any motor depends to a very large extent on the character of oil which is supplied to its moving parts. One cannot get good service out of any engine by using a cheap oil, an oil full of carbon or impurities, and though the fact has been stated and restated many times and oft, it still lacks general appreciation.

"I think automobile manufacturers often could save the owner considerable worry and prevent abuse of the motor if they would inform the purchaser at the outset what special brand of oil they have found to be best adapted to their own engines. Threshing machine oil may suit the requirements of the threshing machine, but it was never meant for an automobile."

Wholesale Violation of Garage Laws.

In a report to the mayor, Raymond D. Fosdick, commissioner of accounts of the city of New York, severely criticizes the administration of the Bureau of Combustibles, and charges particularly laxity and incompetence on the part of the chief of the bureau in dealing with the 1,000 garages in the city. He says that out of 236 of these garages inspected by men detailed from his office, 786 violations of the regulations fixed by the Municipal Explosive Commission were noted. Only 33 of the 236 garages were found to be observing the regulations, while 29 were operating without any license whatever.

RECENT PATENTS.

976,460. Gasolene Tank for Automobiles. Richard Hayes, New York, N. Y. Filed Dec. 3, 1909. Serial No. 531,138.

1. In an apparatus of the class described, a tank the top of which is provided with a filling device through which is passed a shaft provided with a wheel adapted to turn said shaft when liquid is poured into said tank, the bottom of said tank being also provided with a discharge tube through which passes a shaft provided with a wheel whereby said shaft is turned when the liquid passes out of said tank through said tube, and a registering device in operative connection with said shafts and adapted to register the amount of liquid placed in said tank through said filling device and the amount of liquid left in said tank at any time.

976,476. Renewable Journal Bearing Sleeve. Charles S. Lockwood, Newark, N. J., assignor to Hyatt Roller Bearing Company, Harrison, N. J., a Corporation of New Jersey. Filed May 19, 1909. Serial No. 497,089.

1. In a roller bearing, the combination, with the casing and shaft rotated therein, of a wearing-sleeve fitted removably to the shaft and provided with an open notch in its end, a shoulder upon the shaft at the end of the sleeve, a first stud in the shaft fitted detachably to the notch next such shoulder, a notch in the opposite end of the sleeve and a collar secured upon the shaft and provided with a second stud to fit such notch and operating to hold the sleeve against the shoulder in engagement with the first stud.

976,477. Ball Bearing with Self Adjusting Casing. Charles S. Lockwood, Newark, N. J., assignor to Hyatt Roller Bearing Company, Harrison, N. J., a Corporation of New Jersey. Filed Oct. 9, 1909. Serial No. 521,857.

1. In a roller bearing, the combination, with a casing having a spherical bore, of a hub having a grooved seat thereon and two contiguous series of balls fitted to such seat and to the spherical bore of the casing, and means for holding each ball of one series in lateral contact with a ball of the adjacent series in their revolutions upon the hub.

976,493. Means for Facilitating the Starting of Internal Combustion Engines. Frederick Purdy, Kenosha, Wis., assignor, by mesne assignments, to Kate E. Jeffery, Charles T. Jeffery and Harold W. Jeffery, executors of Thomas B. Jeffery, deceased. Filed Dec. 23, 1908. Serial No. 468,889.

1. In an internal combustion engine, a plurality of engine cylinders, pistons in said cylinders, exhaust valves, valve-actuating cams, movable members arranged between said cams and said valves, said members having two positions in one of which the cams are permitted to open said exhaust valves between the ends of the power strokes of the pistons and in the other of which the cams are prevented from opening the exhaust valves before the pistons reach the ends of their power strokes.

976,536. Cranking Device for Automobile Engines. David Augustine, South Bend, Ind. Filed Sept. 13, 1909. Serial No. 517,415.

1. In a cranking device, a vehicle body,

a crank shaft, a clutch mechanism on the crank shaft, a bracket having connection with the vehicle body and the crank shaft, a spring stop secured to the body, a second spring stop secured to said bracket, a crank lever having operative engagement with the clutch mechanism, both of said stops being disposed in the path of movement of the crank lever to effect an automatic release of the clutch mechanism when the crank lever is brought into contact with the said stops, and a spring interposed between the bracket and the clutch mechanism to throw the latter into operation when the crank lever is out of contact with said stops.

976,561. Baggage Carrier for Automobiles. Powell Evans, Philadelphia, Pa. Filed Nov. 10, 1906. Serial No. 527,296.

1. The combination in a baggage carrier for automobiles of a car body having a seat, means co-acting with said seat to form a baggage container under the same, with a second and structurally independent container opening into and mounted under said first container.

976,572. Tilting Body for Automobiles. Thomas B. Jeffery, Kenosha, Wis.; Kate E. Jeffery, Charles T. Jeffery and Harold W. Jeffery, executors of said Thomas B. Jeffery, deceased. Filed April 28, 1906. Serial No. 314,112.

1. In an automobile, the combination with a body, of a supporting frame for said body, means connecting said body to said frame for permitting the body to be swung upwardly, said means comprising a plate fixed to said frame, a bracket fixed to said body, a pin whereby said bracket is adapted to rest upon said plate, and a rod depending from said bracket adapted to detachably engage the lug on said plate.

976,694. Speed Indicator and Recorder. Alva D. Renfro, Detroit, Mich., assignor to Renfro Speed-O-Meter Company, Detroit, Mich., a Corporation of Michigan. Filed July 3, 1909. Serial No. 505,797.

1. In a speed recorder, in combination with a governor adapted to receive its actuation from a rotatable shaft, a drum having an apertured side wall, a magnet therein, interconnecting means between the governor and the drum whereby said drum is caused to rotate upon the actuation thereof, registering keys adapted to be actuated by said magnet when the drum is rotated and its apertured portion is thus brought opposite thereto, a recording roll, a printing ribbon interposed therebetween and the printing ends of the keys, and clock mechanism in operative connection therewith, whereby the movement of said printing roll and its recording sheet regulated, substantially as described.

976,702. Valve. Guido Schuster, Besztercze, Austria-Hungary. Filed Nov. 10, 1909. Serial No. 527,224.

1. In a valve for air-inflated articles, a tubular body through which the air is introduced into the article, constructed of two sections, the outer section threaded into the inner section and having an intermediate portion provided with annular grooves on the inner and outer faces thereof, each groove having a packing, with the packing of the inner groove forming an air-tight joint between the two sections of the body, and a cap threaded on the outer end of the outer section of the body and forming an air-tight joint with the outer packing.

976,705. Portable Testing Device for Mechanically Propelled Vehicles. Fred I. Spellman, Mansfield, Ohio. Filed April 15, 1910. Serial No. 555,597.

A testing appliance for mechanically propelled vehicles comprising a framework, rotary supports mounted thereon, a brake wheel fastened to one of said rotary supports, a brake band, a threaded rod for drawing the brake band about the brake wheel, a lever having one end engaged by said threaded rod, a testing scale, a threaded stem extended from the testing scale and engaging the opposite end of said lever, and a set nut mounted upon the threaded stem and forming a point of resistance for the said lever.

976,731. Reverse Gearing. Harry A. Garrison, Fayette, Iowa. Filed Jan. 11, 1910. Serial No. 537,488.

1. In a reverse gearing, a drive shaft, a rim having a hub portion loosely mounted on the shaft, a master gear on the shaft, a driven shaft, a fixed drum supported by the driven shaft and having its rim extended to lie immediately beneath the said first named rim, the rim of the said drum having a plurality of annular toothed surfaces, shafts extending from said hub, gear wheels supported by the said last named shafts and meshing with the toothed surfaces of the said drum and with said master gear, a brake band for the first named rim, and a sliding clutch member mounted on the drive shaft and operable to engage the said first named rim to cause the same to rotate in a direction with the drive shaft.

976,741. Water Level Regulator and Indicator. George Lane, Poughkeepsie, N. Y., assignor to Lane Motor Vehicle Company, a Corporation of New York. Filed Feb. 15, 1909. Serial No. 477,897.

1. In a combined water level indicator and regulator, an indicating mechanism, a plurality of temperature devices operating upon said indicating mechanism successively to indicate the water level, and means co-operating with one of said devices for regulating the water level.

976,797. Sparking Plug for Internal Combustion Engines. Robert Frederick Hall, Moseley, Birmingham, England. Filed Oct. 30, 1908. Serial No. 460,320.

1. A spark plug for explosive engines comprising an insulator body tapered externally so as to diminish in diameter toward the outer end of the plug and also having a tapered bore which diminishes in diameter toward the outer end of the plug, a metal attaching shell adapted to serve as one of the electrodes of the plug, a metallic sleeve having an internal taper corresponding to and co-operative with the external taper upon the insulator body, said sleeve having a rigid gas tight connection with said shell, and a conductor extending through the bore of the insulator body and having a tapered part which corresponds to and co-operates with the wall of the tapered bore of the insulator body, the tapers upon the exterior of the insulator body and the co-operating sleeve, and also the taper of the bore of such insulator body and tapered portion of the conductor being such that the pressure of the gas acting upon the inner end of the plug will tend to tighten such parts.

976,813. Carburetter. Oscar C. Kreis, Jr., Detroit, Mich., assignor to Gray Motor Company, Detroit, Mich., a Corporation of

Michigan. Filed March 1, 1909. Serial No. 480,543.

1. In a carburetter, the combination of a passage of air having its intake end opening downwardly, said passage being adapted to have the charge drawn through it, means for directing the current of air to be drawn into said intake downward along the outer wall of said passage and inward to the intake to said passage, and a delivery opening for gasoline located below the intake to said passage and in the current of air moving inward to the intake to said passage, said delivery opening being so constructed that it shall deliver the gasoline at right angles to the current of air moving inwardly to the intake to said passage, substantially as described.

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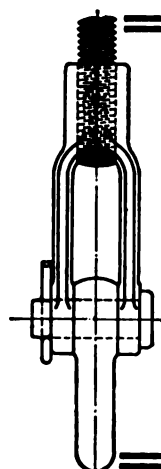
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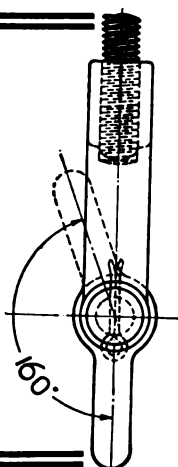
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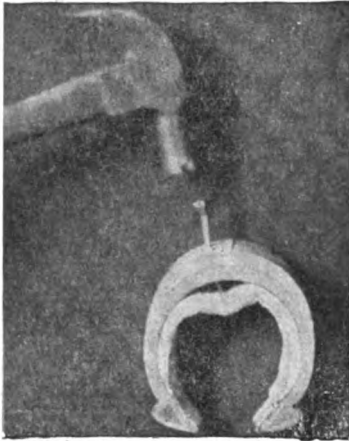
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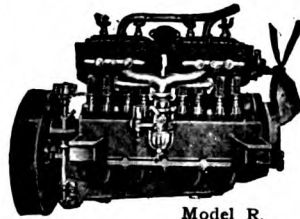
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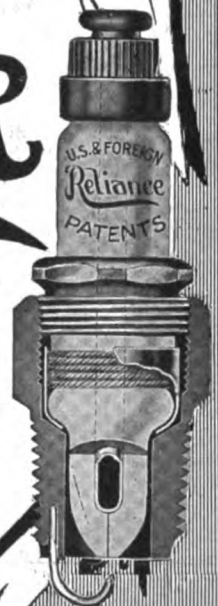
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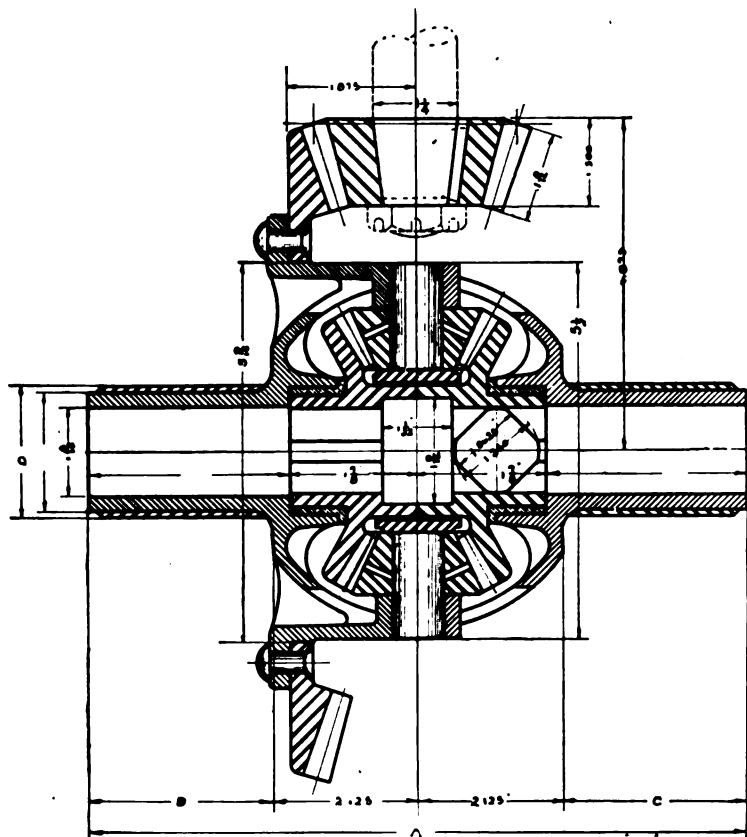
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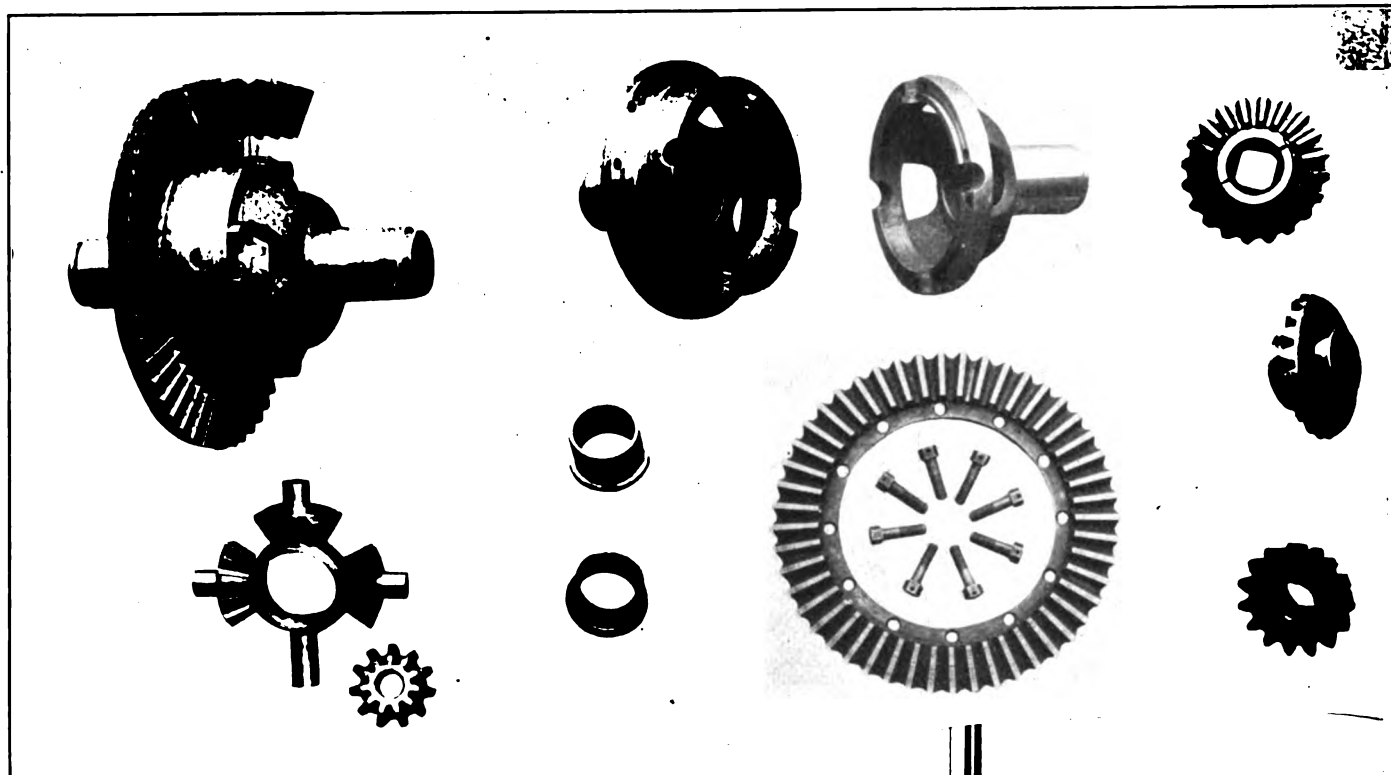
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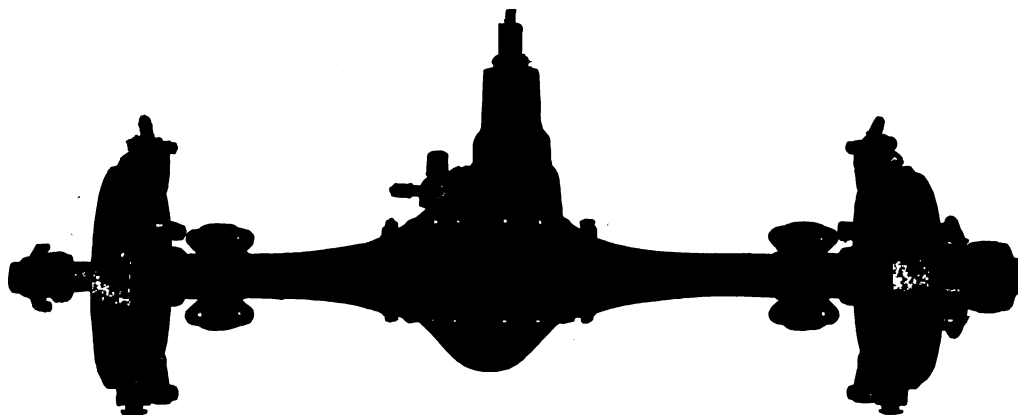
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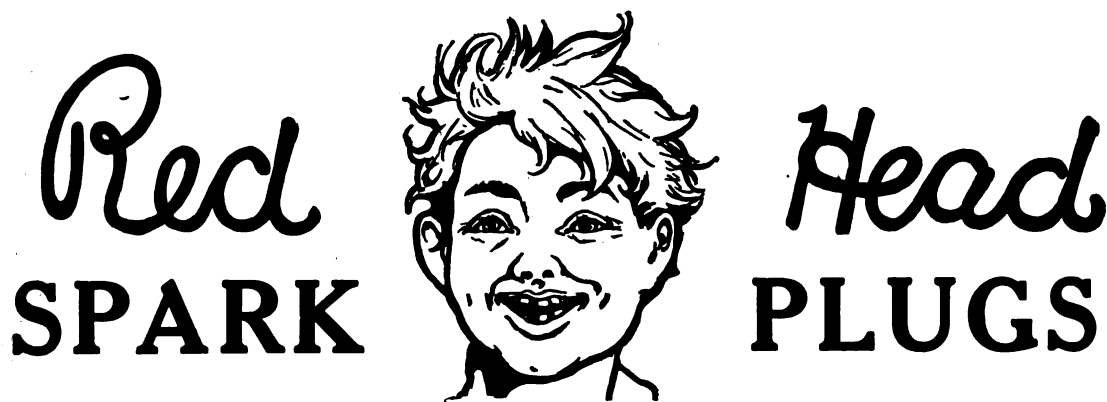
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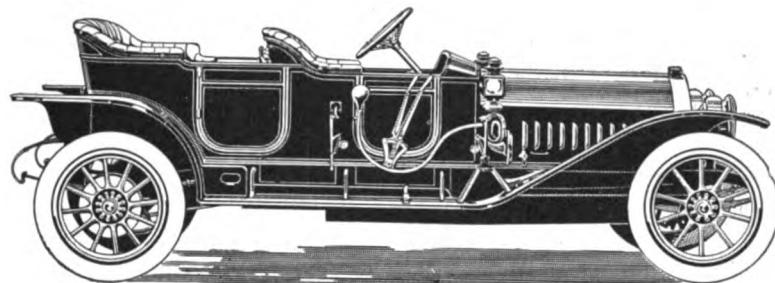
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HARTFORD—
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DEXTER—
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MINNESOTA
MINNEAPOLIS—
Chase, A. F. & Co.
Empire Tire & Rubber Co.
Fawkes Auto Co.
Fenstermacher, O.
Hollis Electric Co.
Janney, Semple, Hill & Co.
Pierson-Wilcox Electric Co.
United Motor Supply Co.
ST. PAUL
Smith & Co., C. J.
MISSOURI
KANSAS CITY—
Auto Specialty Co.
Kansas City Auto Supply Co.
Mercantile Lumber & Supply Co.
Moriarity & Co., E. P.
Motor & Machinists Supply Co.
ST. LOUIS—
Phoenix Auto Supply Co.
MISSISSIPPI
VICKSBURG—
Mississippi Electric Co.
MONTANA
BOZEMAN—
Story Motor Supply Co.
NEBRASKA
HASTINGS—
Jones & Brandes
LINCOLN—
Nebraska-Buick Automobile Co.
OMAHA—
Baum Iron Co.
Omaha Rubber Co.
Western Automobile Supply Co.
NEW JERSEY
NEWARK—
Empire Auto Supply Co.
Martin Auto Co., F. L. C.
Williams, C. L.
PLAINFIELD—
Martin Auto Co., F. L. C.
NEW YORK
ALBANY—
Albany Hardware & Iron Co.
BROOKLYN—
Bindrim, Julius
Weaver-Ebling Auto Co.
BUFFALO—
Frey Auto Supply Co.
Iroquois Rubber Co.
HAMMONDSPOUT—
Motorcycle Equipment Co.
NEW YORK CITY—
American Auto Supply Co.
Auto Supply Co.
Baker & Co., F. A.
Bettes & Ebsen
Carter, R. K. & Co.
Durkee, C. D. & Co.
General Auto Supply Co.
Gibney, Jas. L. & Bro.
Leveridge, Chas. W.
Lowe Motor Supplies Co.
Manhattan Elect. Supply Co.
Motor Car Equipment Co.
Mutual Auto Accessories Co.
N. Y. Auto Supply Co.
N. Y. Sporting Goods Co.
Pruden Hardware Co., W. E.
Smith-Haines
Weiland, Chas.
Westchester Appliance Co.
Willis, E. J., Co.
Wilson Trading Co.
PLATTSBURG—
Marshall, Wood & Riley Co.
ROCHESTER—
Rochester Rubber Co.
Zimbrich Auto Co., A. M.
SYRACUSE—
Central City Rubber Co.
Seitz Co., J. A.
Syracuse Rubber Co.
UTICA—
Utica Cycle Co.
NORTH CAROLINA
CHARLOTTE—
Coddington, C. C.
OHIO
CANTON—
Kennedy Hdwe. Co.
CINCINNATI—
Ball-Fintze Co.
Coughlin & Davis
CLEVELAND—
Collister & Sayle
Pennsylvania Rubber & Supply Co.
COLUMBUS—
McKeever Electric Co.
Ross-Hull Electric Co.
DAYTON—
Shroyer & Co., Geo. W.
NEWARK—
Ball-Fintze Co.
TOLEDO—
Bissell Co., F.
Nagel Electric Co., W. G.
Oberwegner Motor Co.
Toledo Electric Co.
OKLAHOMA
HOBART—
Hobart Motor Car Co.
OKLAHOMA CITY—
Oklahoma Motor Equip. Co.
OREGON
PORTLAND—
Archer, Combs & Childs Co.
Ballou & Wright.
Keenan, F. P.
O'Gorman & Younie
PENNSYLVANIA
ERIE—
Jacob Roth
HARRISBURG—
Harrisburg Auto Co.
PHILADELPHIA—
Gibney & Bros., Jas. L.
Keim Auto Supply Co., The
Manufacturers' Supplies Co.
Nock Co., Geo. W.
Penn Auto Supply Co.
Smith & Co., Chas. S.
PITTSBURG—
Consumers' Auto Supply Co.
Kauffmann Bros.
Pittsburg Auto, Equip. Co.
Woodwell Co., Jos.
READING—
Fry, Keyser
Youse & Daddow
SCRANTON—
Scott, C. B.
Scranton Auto Co.
WILKESBARRE—
Wilkesbarre Auto Co.
RHODE ISLAND
PROVIDENCE—
Combination Ladder Co.
Union Hardware & Electric Supply Co.
Waite Auto Supply Co.
TENNESSEE
MEMPHIS—
Electric Supply Co.
Parker & Co., Jerome P.
TEXAS
DALLAS—
Alamo Auto Co.
Dillon Auto Co.
Ferris-Dunlap M. C. Co.
Maxwell-Briscoe Handley Co.
GALVESTON—
Christensen & Co., J.
HOUSTON—
Behring, C. L. & Theo., Jr., Inc.
SAN ANTONIO
Alamo Auto Co.
Automobile Sales & Supply Co.
WACO—
Reeves & Rotan
UTAH
SALT LAKE CITY—
Bertram Motor Supply Co.
Salt Lake Hdwe. Co.
VERMONT
BRATTLEBORO—
Manley Bros.
VIRGINIA
NORFOLK—
Grover, Wm. H.
Wallace Bros., The
PETERSBURG
Stratton & Bragg
RICHMOND—
Tower-Binford Electric & Mfg. Co.
WASHINGTON
NO. YAKIMA—
Yakima Auto Supply Co.
SEATTLE—
Chanslor & Lyon M. S. Co.
Motor Equipment Co.
Studebaker Bros.
SPOKANE—
Alexander Cycle Co.
Archer, Coombs & Child Co.
Northwestern Auto Supply Co.
TACOMA—
Automobile Supply Co.
Chambers Co., Edwin
WISCONSIN
MILWAUKEE—
Andrae & Sons Co., Julius
CANADA
TORONTO, WEST—
Canada Cycle & Motor Co.
NEW BRUNSWICK—
Motor Car & Equipment Co.

PREMIER



Premier 6-60 Clubman

THE PROVEN CAR OF QUALITY

For seven years Premier cars have been produced. Models have changed from time to time, but in one respect the Premier policy has never deviated.

Mechanically every car has been built around the highest of engineering ideals—a policy which has borne fruit in the unwavering loyalty of the great majority of Premier owners.

This policy is responsible for the fact that a Premier owner rarely changes to another make of car.

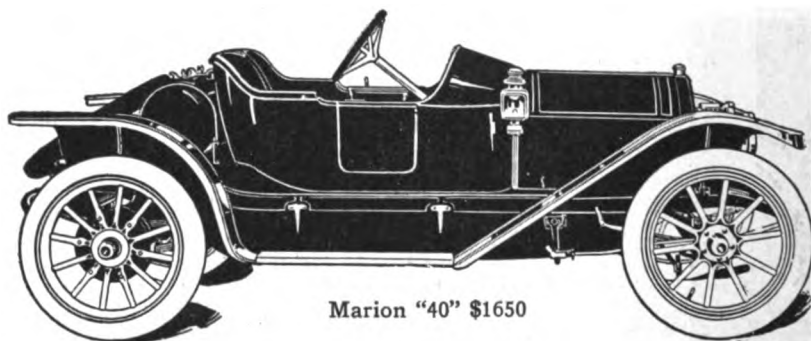
To this policy are directly traceable the long life of Premier cars, and their extraordinary performances in the stress of national reliability contests and severely-trying private service.

The Premier Company has faithfully followed its ideals because it believes in them and because it believes in making every Premier car an investment for its purchaser.

Catalogue and literature, picturing and describing all models, will be sent upon request to Dept. S.

PREMIER MOTOR MANUFACTURING COMPANY, Indianapolis, Ind.

Marion



Marion "40" \$1650

This Motor Car Will Live Up To Your Expectations

Really, the only drawback to the MARION has been the price. Business men have said, "That price is too low. People will discount your car because of that low price. It's a shame to put too low a price on such a great car." But we felt convinced after striving for years to get our cost down and being able to offer wonderful value, that the public would find out the facts—and we know now that we have been right.

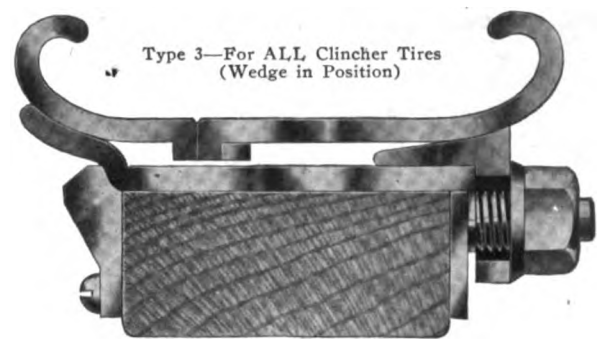
Many an expert—from a competitor or European factory—has examined a MARION and has called for a demonstration. And experts have tested the motor, looked over the axles, the clutch and transmission, the lubrication, the steering arrangement, the frame, the springs and brakes. And without exception each one has expressed the opinion that the MARION gives the most for the money.

The MARION has been built judiciously—according to a hard-headed plan. We have weeded out everything unequal. We have chosen the best in every detail—irrespective of who made it—ourselves or some other concern. The MARION is a composition of perfections.

The MARION will give you the most for your money.

The MARIONS for 1911 at \$1150 to \$1700 are the cars that represent work of over a thousand men.

THE MARION SALES COMPANY, Indianapolis, Ind.



STANDARDIZATION OF RIMS

that benefits

CAR BUILDERS—TIRE MAKERS—CAR OWNERS

The Standard Universal Quick Detachable Demountable Rims

“FIT ALL TIRES”

and

Solve the Problem of Interchangeability

25,000 sets of Demountable Rims and 135,000 sets of Quick Detachable Rims, practically 96 per cent. of the total number of Rims made in the United States, have been contracted for by the following manufacturers:

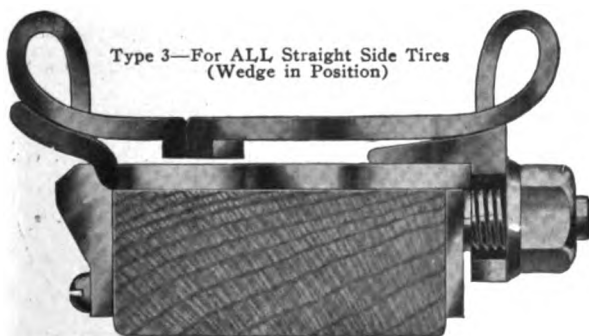
Acme Motor Car Co., The
American Locomotive Co.
American Motor Car Co.
Anderson Carriage Co.
Argo Electric Vehicle Co.
Ashland Auto Co.
Atlas Motor Car Co.
Atwood Auto Co.
Auburn Auto Co.
Austin Auto Co.
Auto Car Co.
Badger Motor Car Co.
Baker Motor Vehicle Co.
Bartholomew Co., The
Bergdoll, L. J., Motor Co.
Borbein Auto Co.
Broc Electric Carriage Co.
Buick Motor Co.
Burg, The L., Carriage Co.
Cadillac Motor Car Co.

Canada Cycle & Motor Co.
Carhartt Auto Corp.
Chalmers Motor Co.
Columbia Motor Car Co.
Cook Auto & Carriage Co.
Corbin Motor Vehicle Corp.
Cunningham, Jas., Son & Co.
Davis, Geo. W., Carriage Co.
Dayton Motor Car Co.
Dietrich Motor Car Co.
E-M-F Co.
Ellis Motor Car Co.
Elmore Mfg. Co.
Fiat Auto Co.
Franklin, H. H., Mfg. Co.
G & J Tire Co.
Gabriel Auto Co.
Garford Co., The
Gramm Motor Car Co.
Great Southern Auto Co.

Grout Auto Co.
Hartford Rubber Works Co.
Hayes Wheel Co.
Hol Tan Co.
Hudson Motor Car Co.
Imperial Wheel Co.
International Harvester Co.
Inter-State Auto Co.
Jeffery, Thos. B., Co.
Johnson Service Co.
Kissel Motor Car Co.
Lexington Motor Car Co.
Locomobile Co.
Lozier Motor Car Co.
Luverne Auto Co.
McFarlan Motor Car Co.
McLaughlin Motor Car Co.
Mann-Aldrich Carriage Co.
Marion Motor Co.
Maxwell-Briscoe Motor Co.

Michigan Buggy Co.
Middleby Auto Co.
Mitchell-Lewis Motor Co.
Moline Auto Co.
Moon Motor Car Co.
Moyer, H. A.
Morgan & Wright
National Motor Vehicle Co.
Nordyke & Marmon Co.
Oakland Motor Car Co.
Olds Motor Works
Overholt Co.
Packard Motor Car Co.
Paterson, W. A., & Co.
Peerless Motor Car Co.
Pierce-Arrow Motor Car Co.
Pence Auto Co.
Pope Mfg. Co.
Premier Motor Mfg. Co.
Prudden & Co.

Pullman Motor Car Co.
Rauch & Lang Carriage Co.
Richmond Iron Works Corp.
Schacht Motor Co.
Selden Motor Vehicle Co.
Simplex Auto Co.
Stanley Motor Carriage Co.
Stearns, F. B., Co.
Stevens-Duryea Co.
Streater Motor Car Co.
Studebaker Auto Co.
Thomas, The E. R., Motor Co.
Traveller Auto Co.
Velle Motor Vehicle Co.
Waverley Co., The
Westcott Motor Car Co.
White Co., The
Willys-Overland Co.
Winton Motor Carriage Co.



Write for illustrated
descriptive matter.

**The
United Rim
Company**
AKRON, OHIO



Haynes Plant In Operation

Factory Fire Will Not Delay Deliveries Beyond Two Weeks.

In spite of the fire in the main building of the Haynes factory on February 28th—the delivery of all Haynes models in good quantities will be resumed within two weeks.

Not a moment was lost in getting all departments which escaped the fire in operation and by establishing other departments in different localities, construction has continued almost without interruption.

HAYNES

Cars Being Built NOW

As we were cramped in our old factory, we stored parts in outside warehouses—and as our engine building, chassis assembly, painting, upholstery and top building departments are in operation, complete cars are now on the way.

The Greater Haynes Factory Soon Ready

Plans for a larger, finer, more modern fireproof Haynes factory were ready before the smoke of the fire cleared away. We are going to make a double quick record in establishing ourselves in this great plant. Watch for announcement of the date.

Meantime order your Haynes cars and see us "deliver."

Haynes Automobile Co.
Station C KOKOMO, INDIANA

AJAX TIRES

For the Consumer:—AJAX Tires give 1500 miles more service—save 30% in tire cost—and do away with tire troubles.

For the Dealer:—AJAX Tires mean more sales—a better value for the money to customers—and the pick of the tire business in any locality.

That's why it pays to specify AJAX Tires.

Write for free booklet, "Common Sense Lessons in the Care and Preservation of Tires."

AJAX-GRIEB RUBBER CO.
General Offices: 1796 Broadway, New York
Factories: Trenton, N. J.
Branches in Principal Cities



A Wonderful Business Campaign

Within a few months an astounding demand has been built up for MOTZ Cushion Tires. Seeing the amazing features of this trouble-proof, resilient tire, thirteen manufacturers of electrics immediately adopted it for their 1911 cars.

An extensive campaign of advertising helped along the landslide of owners to the Motz.

Today the majority of electric cars that you see on the streets are MOTZ-Equipped.

Owners of gasoline cars also are fast flocking to the MOTZ. Commercial trucks, physicians' cars and taxicabs, also.

All this in a short period of a few months. All because the MOTZ is the world's only trouble-proof tire that has the resiliency of the pneumatic tire.

The only resilient tire that abolishes punctures, blowouts and extra equipment is the

MOTZ Cushion Tire

Its ingenious undercut sides, slantwise bridges and double tread give it this astonishing resiliency.

Tire cost with the MOTZ is four-tenths of a cent per mile. With pneumatics the cost per mile is 5 to 20 cents. It consumes no more current than high-grade pneumatics. MOTZ Tires average 10,000 miles. One set has gone 24,000 miles—scores of others 15,000 to 18,000 miles.

Today the sale of the MOTZ line is vastly profitable to dealers and garage men. For a healthy, steady demand has been created by this strong business campaign. Extensive advertising is swelling the demand week after week. MOTZ Tires are built for electric cars, gasoline cars, physicians' cars, taxicabs, etc. Our trade proposition is especially attractive. Full particulars are yours for the asking. Write for it today.

THE MOTZ TIRE AND RUBBER COMPANY

58 Bertsch St., Akron, Ohio

See our exhibit at the Boston Show, Space No. 55



Your Safety

A Plain Talk About Brake Lining

Car safety — your safety depends on brake efficiency. Brake efficiency depends on "quality" in brake lining.

TRADE MARK
Raybestos

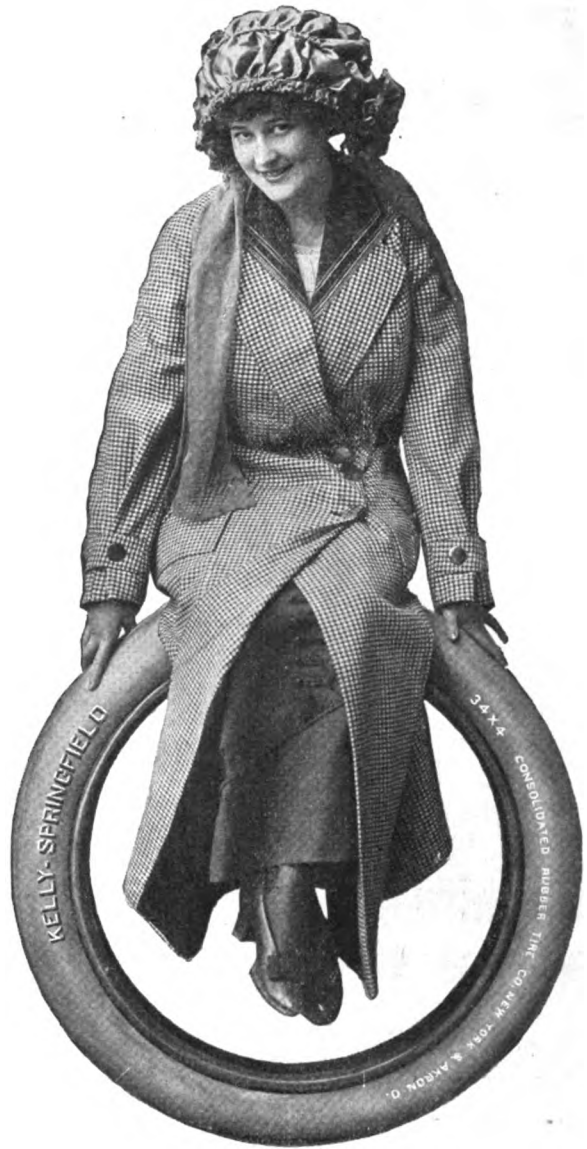
stands at the head of all brake linings. There's no doubt about that. Better material, better design, better workmanship throughout.

RAYBESTOS is asbestos woven with copper wire. It possesses the highest possible coefficient of friction. It's oil, heat, water, gasoline and practically wear-proof.

Be sure your brakes are lined with RAYBESTOS. See to it at once. All dealers carry it—Write us for interesting literature.



THE ROYAL EQUIPMENT COMPANY
436 Housatonic Avenue BRIDGEPORT, CONN.



Kelly-Springfield Automobile Tires

The name "Kelly-Springfield" has identified the best in tires since rubber was first applied to wheels.


The automobile called for a different tire, but not for a different standard of quality. You can depend upon the Kelly-Springfield for your car just as drivers have depended upon it for their carriages during the past fourteen years.

Specify Kelly-Springfield Tires on your automobile. They cost no more than any first-class tire and are better.

CONSOLIDATED RUBBER TIRE COMPANY
20 VESEY STREET, NEW YORK

Branch Offices:

New York, Chicago, Philadelphia, Boston, St. Louis,
Detroit, Cincinnati, San Francisco, Los Angeles and Akron, O.



PITTSFIELD

“Arc Flame System” MAGNETO

Accurate and durable. Every part made of the finest kind of material, fashioned by skilful craftsmen and assembled under the most rigid inspection. Reliable and efficient in service.

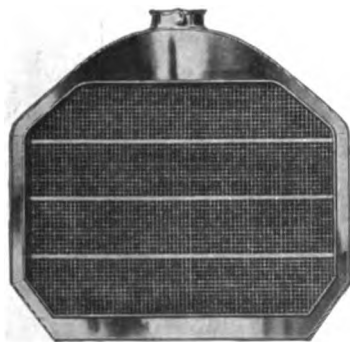
High tension, with stationary, removable coil. No moving wire on the armature. Each spark is followed by an arc flame. This arc flame will ignite a much weaker mixture than with the spark produced by the usual coil ignition. A variation of 45 degrees is allowed on the magneto shaft, which means 45 degrees in the crank shaft for a four cylinder, four cycle motor, as the magneto runs at crank shaft speed. The retarded spark is just as efficient as the advanced spark, making it easy to start the motor with a quarter turn of the crank, with the timing lever fully retarded.

Get the catalog of the “Pittsfield Ignition System”

PITTSFIELD SPARK COIL COMPANY, Dalton, Mass.

SALES REPRESENTATIVES—NEW ENGLAND, W. J. Connell, 36 Columbus Ave., Boston. ATLANTIC STATES, Thomas J. Wetzel, 17 W. 42d St., New York. CENTRAL STATES, K. Franklin Peterson, H. V. Greenwood, 166 Lake St., Chicago. MICHIGAN, L. D. Bolton, 319 Hammond Building, Detroit. PACIFIC COAST, The Laugenour Co., San Francisco.

LET US FIGURE WITH YOU ON

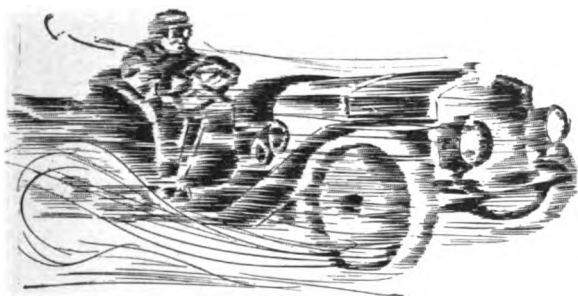


Our New Cellular

Radiators, Fenders, Pressed Steel Frames, Mufflers, Tanks, Hoods, Mechanical Oilers, Underpans, Brake Drums, Battery and Tool Boxes, Fans, Brass Moulding, Foot Rests, Robe Rails and Stampings of All Kinds.

Write for New Catalog

THE KINSEY MANUFACTURING COMPANY
Toledo, Ohio



No Matter How Fast— You Can Stop Almost Instantly

Half the pleasure of automobiling is lost when there is any doubt about the brakes being able to bring car to a quick stop in case of emergency. Imminent danger often looms up only a few feet ahead and it is next to impossible to avoid serious accident if brakes are equipped with ordinary linings, for tests show that most linings will not lock wheels of a car in less than 12 to 25 feet. Wheels can be locked almost instantly with

J-M NON-BURN BRAKE LINING

This mineral lining, when applied to the metal drum, grips like a pipe wrench and the wheels *cannot budge*. Yet, a car can be stopped just as slowly and just as gently with J-M NON-BURN LINING as with any other lining.

Intense heat created by friction, and oil, gasoline and water, which soon put an end to organic linings, have no effect whatever on this Asbestos lining.

If your dealer will not supply you with J-M NON-BURN, write us and we will tell you where it can be obtained, or sell you direct.

Write our nearest branch for Sample of NON-BURN and copy of "*Practical Pointers on the Care of Automobile Brakes.*"

H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos
and Magnesia Products

ASBESTOS

Asbestos Roofings, Packings,
Electrical Supplies, Etc.

Baltimore
Boston

Buffalo
Chicago

Cleveland
Dallas

Detroit
Kansas City

London
Los Angeles

Milwaukee
Minneapolis

New Orleans
New York

Philadelphia
Pittsburg

San Francisco
Seattle

St. Louis
(1186)

The Pioneers to Employ 92%
of Balls in the Raceway



SCHAFER Ball Bearings Fear No Comparison

Most of the prominent races and endurance tours of 1910 were won by "Schafer Equipped Cars."

Our combination radial and thrust bearing is now ready. Send for details.

WRITE FOR CATALOGUE

SOLE IMPORTERS

BARTHEL, DALY & MILLER, 42 Broadway, New York City

Wind Shield Facts for Accessory Dealers



List Prices:		
36 in.	41 in.	44 in.
\$27.50	\$30.00	\$32.50

Every manufacturer who made quantities of cheap shields last year that didn't get to market is in a frenzy to unload the surplus—at any price.

That means, Mr. Dealer, that you must buy shields cautiously this spring.

No matter how cheaply you buy an unadvertised, unmechanical, unstable shield, you will be at a disadvantage.

Because we are selling

The Hydraulic

to dealers for less money than jobbers formerly paid.

The HYDRAULIC has two years of advertising and prestige in back of it—and we continue to advertise.

The HYDRAULIC'S list prices are established and reasonably maintained in all parts of the country.

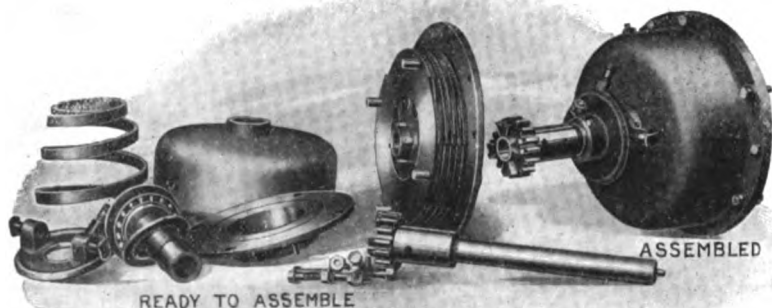
The HYDRAULIC is admitted, even by competitors, to have no superior in point of material and workmanship. We use heavy gauge brass and imported French plate glass.

As a result of the few advertisements published this spring, HYDRAULIC Sales already equal those in the height of the 1910 season.

Do you grasp the significance of this?

In justice to yourself, write for quotations before buying any other shield.

THE EAGLE COMPANY, Automobile Department, 98 Warren Street, Newark, N. J.



MODEL D MULTIPLE DISC CLUTCH

WABASH GEAR WORKS

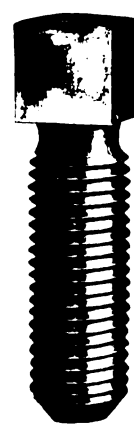
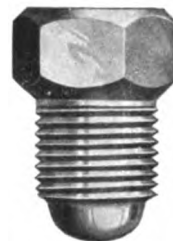
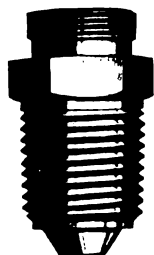
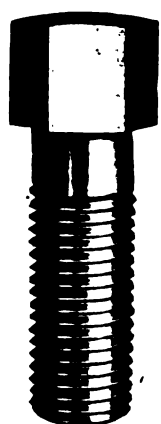
1000 So. 10th Street

Terre Haute, Indiana

OUR LINE OF Levers, Clutches AND Transmissions

meets the demands of the most
exacting engineer, both in
DESIGN and QUALITY.

GET IN
TOUCH WITH US



Cap and Set Screws

Plain and Castellated Nuts Special Parts

IF you make Automobiles, Engines, Electrical fittings, Instruments, or heavy Machinery, you will appreciate the quality, price and deliveries which we are able to furnish on all kinds of brass, steel and iron parts milled from the bar.

BESIDES a large assortment of Cap and Set Screws, we carry Plain and Castellated Nuts, also Hexagon Brass Nuts at factories and warehouses for immediate shipment. Catalog on request. Quantity discounts.

WE have a battery of Acme Automatics devoted exclusively to the production of all kinds of special parts to customers' specifications. Send us your samples for quotations.

THE NATIONAL-ACME MANUFACTURING CO.

NEW YORK—77 White St.

BOSTON—141 Milk St.

CHICAGO—549 Washington Blvd.

Warehouses: NEW YORK and CHICAGO

CLEVELAND, OHIO

DETROIT—1222 Majestic Bldg.

ATLANTA—Candler Bldg.

Factories: CLEVELAND, MONTREAL, CAN.

General Foreign Representatives: A. H. SCHUTTE, SCHUCHARDT & SCHUTTE.

CONNECTICUT SHOCK ABSORBERS

Will Not Rattle on the Car

CONNECTICUT Shock Absorbers are so carefully designed and constructed that they will not rattle when properly installed. No motorist likes a rattling, noisy absorber—it's a sure sign of poor construction.

The CONNECTICUT Absorber is designed on a scientific principle, it's built the "CONNECTICUT QUALITY WAY" and backed by a factory with years of successful manufacturing experience.

In the CONNECTICUT Shock Absorber there are no friction washers to replace, or constantly adjust; there is no liquid to require renewing; there is practically no wear on the absorber itself; therefore, it will last as long as the car itself, requiring no attention from one year to another. Sold with a guarantee or your money back.

**Connecticut Shock Absorbers
Are Sold Installed on the Car.**

Write for catalog No. 24. Also particulars regarding our free trial offer. Mention make, year and model of car.

CONNECTICUT SHOCK ABSORBER CO., Inc.

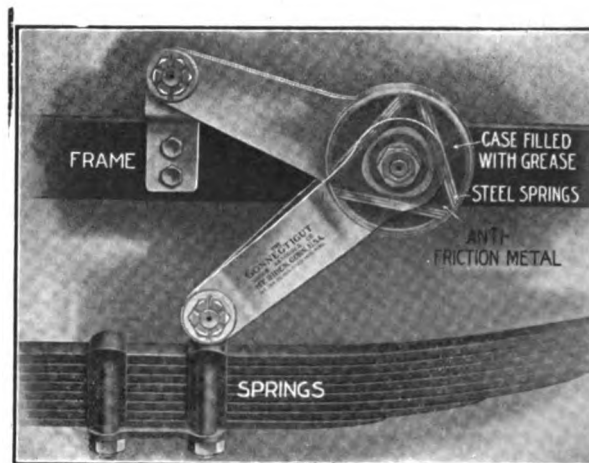
20 Britannia Street
1783 Broadway, New York.

BRANCHES:

MERIDEN, CONN.

343 Michigan Ave., Chicago.

544 Van Ness Ave., San Francisco.



Sectional View

THE ECONOMY IS ECONOMICAL

Because of Unit Assembly



TWO CAPACITIES—1000 LBS. AND 2000 LBS.

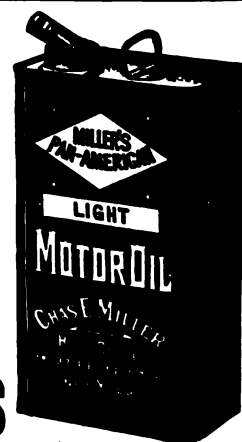
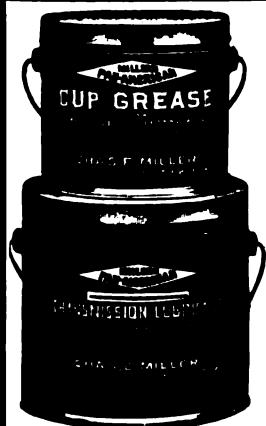
Economy Engines can be entirely removed or replaced in 45 minutes, transmission in 35 minutes, radiators in 15 minutes and jack shafts in 20 minutes. Either part without disturbing the other two, and all without disturbing the body.

This spells economy and convenience.

Back of it all is one of the largest exclusive truck factories in the west.

Send us an inquiry and let us show you why

ECONOMY MOTOR CAR COMPANY, Bissel and Cass Streets, Joliet, Ill.



MILLERS' Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles. In order to convince you of the efficiency of these oils we are willing to make you a special price for an initial order, much lower than usually quoted on other high grade oils.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Special Prices for Manufacturers, Jobbers and Dealers

ADDRESS OIL DEPARTMENT

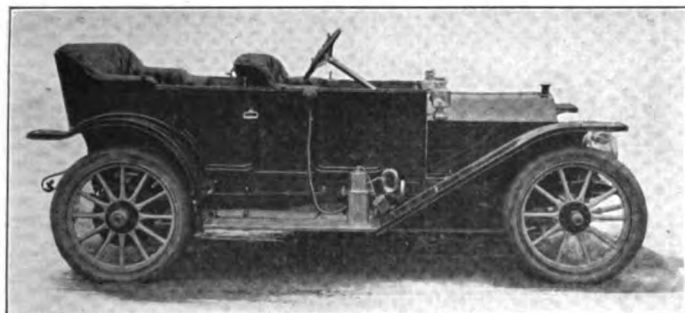
CHAS. E. MILLER, MANUFACTURER, JOBBER, EXPORTER AND IMPORTER
Home Office, 97-99-101 Reade St., New York City
The Largest Auto Supply House in America.

BRANCHES—Philadelphia, Boston, Cleveland, Detroit, Buffalo, Hartford, Atlanta, Brooklyn, New York City, New Orleans, Springfield.

You Can Pay More

for an automobile, but if you spend twice the amount of money you can obtain no more intrinsic value in materials, quality of workmanship or design; nor a car that will run as well and give more lasting satisfaction than a

Pullman



Model O Vestibuled Touring Car.

"Pullman automobiles are worthy of their name"

The PULLMAN car has solid strength of construction that means freedom from repairs. It has the power, the speed, the size to take you anywhere and at a low consumption of gasoline and oil.

The PULLMAN is an exceptionally powerful and reliable car that is built to fulfill every requirement of touring. Every part bears a perfect relation to every other part, which makes the PULLMAN a perfectly proportioned car—a car in which the correct suspension of every part greatly reduces the wear on tires.

In 1910 the PULLMAN won every endurance and speed contest in which it was entered, several times defeating cars of three times the PULLMAN cost and horsepower.

"Pullman Performances Prove Its Perfection"

Prices \$1650 to \$4000; 30, 35 and 50 Horsepower

Write for catalog and testimonials of owners.

PULLMAN MOTOR CAR CO.

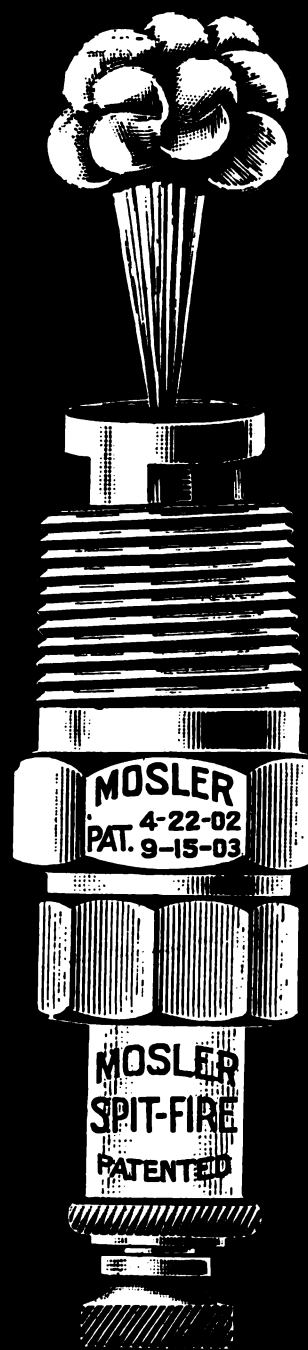
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YORK, PA.

Mosler Spit Fire

THE PLUG WITH
THE DEEPEST CHAMBER

Made to fit any Engine any Thread



Magneto Type-Battery Type-Breech-Block Type The plug with the handle

A. R. MOSLER & CO.
163 W 29TH ST. NEW YORK.

SIMMS MAGNETOS

No Cranking—More Pleasure

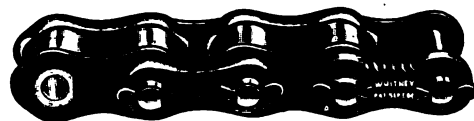
With the Simms Motor Starter starting is made practicable from the seat without bother or exertion.

The Simms Motor Starter is used in connection with the standard Simms Magneto. This is no complicated system of dual ignition. No high tension switch, high tension wiring or separate coil is used.

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1780 BROADWAY, NEW YORK CITY
London Representative: Simms Magneto Co., Ltd. Paris Representative: Cie des Magnetos Simms



WHITNEY Chains Are Built for Strains

Approved by Men Who Know

THE WHITNEY MFG. CO., Hartford, Conn.

HEAT-TREATED AUTOMOBILE FRAMES

Crucible Chrome Nickel
Steels and Our Own Special
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PRESSED STEEL BRAKE DRUMS

Up to 24 Inches Diameter
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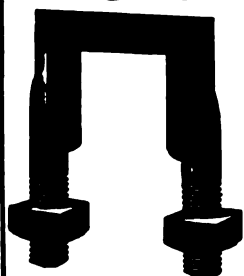
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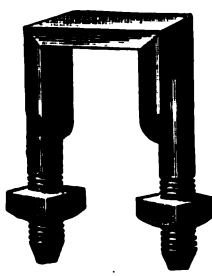
THE BOSSERT COMPANY, Utica, N. Y.

Forgings for the Automobile Trade



SATISFACTION GUARANTEED

Thousands of our
Spring Clips
are now in use, hav-
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the leading automo-
bile manufacturers.



Have you secured our prices?

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THE CAR OF 1911 IS THE "HENRY"



Just to say "1911 Model" does not describe any Henry. The verdict of Henry dealers this month is, "The Henry is the car of 1911." Sales are big. Territories going. Men who have grown gray buying motor cars declare it their choice first, last and all the time.

Dealers Who Want The Leader

Are you acquainted with the Henry line—the fine power, type and price combinations from \$900 to \$2000, big, roomy, solid-comfort cars? To know the Henry is to want territory. Ask us to send the Henry catalog and proposition.

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**HENRY MOTOR CAR
SALES CO.**

1507 Michigan Ave., Chicago, Ill.



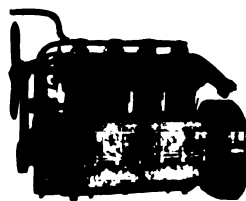
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"Geared-to-the-Truth"

Jones Speedometer Dept.

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RUTENBER MOTORS



now can be had in 18 makes of pleas-
ure cars and in 10 makes of commer-
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the best." Place your orders early for
prompt deliveries.

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MARION, IND. LOGANSPORT, IND.
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Solar Users Are the Best Solar Advertisers

It isn't because we advertise, it isn't because of any special salesmanship we possess, that most of the high-grade American cars are today equipped with Solar Lamps.

It takes more than good advertising or good salesmanship to make a car manufacturer pay out thousands of dollars more for his lamp equipment each year.

It's because the vast army of Solar users have spread abroad through the motoring public the knowledge that Solars are the only absolutely, reliable, dependable and satisfactory lamp equipment.

Even when a car maker doesn't equip regularly with Solar Lamps, he'll furnish them if you insist on them.

Have him put Solars on your car, and join the great army of those who have abolished lighting troubles.

We should like to place our interesting free catalog in your hands.

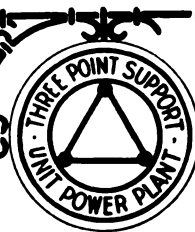


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(93)



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**EACH MODEL PRE-EMINENTLY
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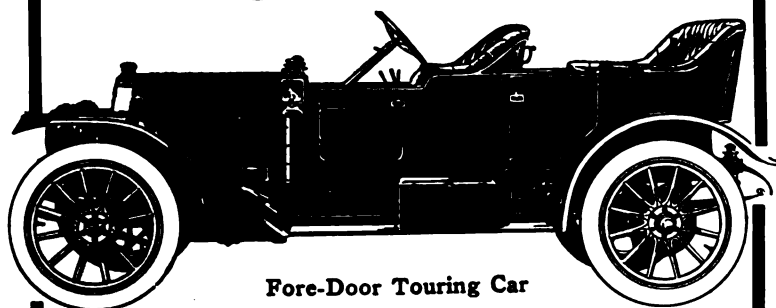
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**4 Cylinder Cars
24 to 40 H.P.
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**6 Cylinder Cars
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Send for Special Offer. The best retailers
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IGNITION ABSOLUTELY SURE

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FOR LONG RANGE - FOR SHORT RANGE

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ELECTRIC HORN

The choice of motorists who realize the need of a long range warning and the value of press-the-button operation, yet who desire not to startle or offend those whom they warn. It is the signal of a gentleman and a careful driver.

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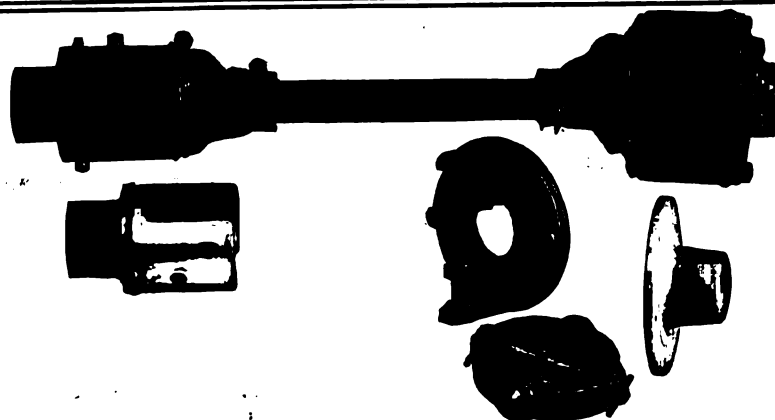
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\$1.00



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Type F-600



The trunion block or slotted yoke type joint takes the slip or lateral motion and the ring and pin type joint at the front end the principal angle.

All wearing surfaces extra large and hardened and ground. Grease tight and dust proof.

Our prices extremely low.

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Bosch-Equipped Cars Win

In Panama-Pacific Race

San Francisco, February 22, 1911

The Free-for-All—163.8 Miles—Won by

Car	Driver	Magneto
Pope-Hartford	Dingley	Bosch

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Dingley in Bosch-Equipped Pope-Hartford also won second place in Heavy Car Race.

Thus Bosch Magnetos Triumph in first important 1911 race after winning 42 of the 44 long distance races of 1910.

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Rust-Proof Car Bodies and Parts

Easily take a perfect finish



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You should have Rust-Proof material in your car.

ALUMALOYD SHEETS Are Rust-Proof



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"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

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Runabout, Baby Tonneau, Touring Car, Coupe
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Construction—Mechanically unequalled.

Durability—Greater than the life of the car.

Efficiency—Proven by the users.

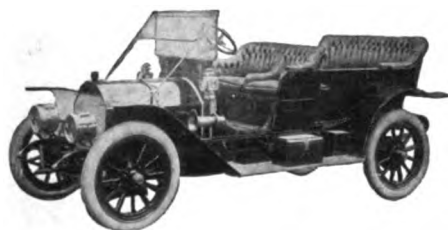
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TOY TONNEAU
SPEEDSTER

Each \$2150



Style, Luxury, Quality, Strength, Speed.

Made Right and Stays Right

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You can buy

Rebuilt Thomas Flyers

and other makes practically as good as new which are cheaper and better than some new cars. Prices range from \$750 up. Second-hand small cars taken in exchange.

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New York Branch: Broadway and 63d Street
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write us for sample sets, and prices, on our



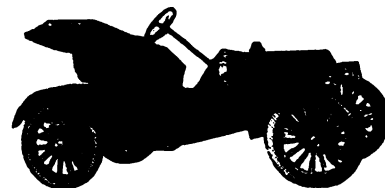
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Metz 1911 Runabout

Every car fully equipped exactly as shown
\$485



EQUIPMENT—Bosch magneto, top and slip cover, gas lamps and generator, oil lamps, horn, 28 x 3 standard clincher tires, and set of tools.

GOOD DEALERS WANTED IN UNOCCUPIED TERRITORY.

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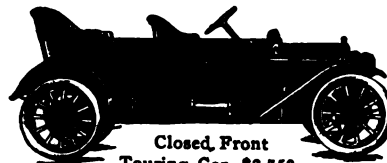


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New Britain, Conn., U. S. A.
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"The Easiest Riding Car in The World"



Closed, Front
Touring Car, \$2,750

Holds more long-distance racing records
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VALVELESS

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The one car in America that offers you all that a high grade, high power car can offer; and in addition the tremendous advantages in operation and maintenance which only a perfect valveless motor can give.

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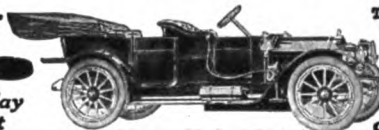
The Classiest Car of Them All

The sturdiest, most rugged, most practical car you can wish for, with the same graceful, fetching lines, rich upholstery and perfect mechanism for which you must pay a thousand dollars more in other cars.

C. P. Henderson, Sales Department,
Cole Motor Car Company, Indianapolis, Ind.

"Fore-Dore"
Touring Car,
30-36 H. P.
\$1,650

Cole Flyer
Torpedo Roadster,
30 H. P.
\$1,500

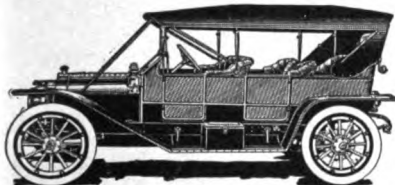


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With complete touring equipment, from \$2250 to \$2600

Good territory still open for live agents.

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GEO. B. SELDEN, Pres. Licensed under Selden patent

The Selden Car stands for every desirable development in the automobile—from the powerful perfectly constructed engine to the evenly balanced quality parts that go to make the finished car.

A wide range of body styles and prices. Roadster, touring and torpedo bodies. New four and six passenger torpedo bodies with fore-doors.

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GUARANTEED FOR LIFE

The most economical car in the world

Runabout	\$750	Touring Car	\$900
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SIXTEEN
MODELS

Hill Climbers

A most complete line, both pleasure and commercial, ranging in price from \$650 to \$1750.

A CAR FOR EVERY ARGUMENT
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THE STRONG POINTS—

Three Point Suspension.

Gramm Multiple Disk Clutch.

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"King of the Road"

THE latest addition to the "Dreadnought" Moline 1911 Models. Beautifully finished in a rich dark grey, heavy nicked and black enameled trimmings. Price includes zig-zag windshield, five lamps and full kit of tools. Equipped with our famous



Fore Door, \$1700

4 x 6 Long Stroke Motor

with which we won Chicago Trophy in 1910 Glidden Tour and Team Trophy in 1000 mile Chicago run. Write for booklets on both runs and 1911 Catalog

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35 H. P.
112-in. Wheel Base
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Steering Gears
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Clutches and
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MODEL 95—UNIT TRANSMISSION
Brake and Clutch with Raybestos-faced Discs.
25-35 H. P.

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Model G—2-Passenger Roadster.....\$1,000

Model H—5-Passenger Touring Car.....1,150

Model J—5-Passenger Fore Door.....1,200

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You can't pay more and get your money's worth.

Catalogue and full details of our complete line sent on request. Open territory proposition for live dealers.

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The 1911 Paige-Detroit

4 Cycle—4 Cylinder \$800
Full 25 H. P. Motor

Complete specifications and catalogue upon request

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BROWN-LIPE GEARS

Transmission and Steering Gear Department
Operated by

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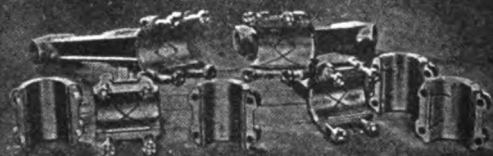
Differential Gear Department by

BROWN-LIPE-CHAPIN COMPANY
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Capacity Immensely Increased

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30,000 MILES WITHOUT ADJUSTMENT.
THESE PARSONS WHITE BRASS BEARINGS RAN
THAT DISTANCE IN A PACKARD CAR. THEY ARE BACK IN
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STILL RUNNING RUNNING STILL.



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Write for catalogue
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NOW READY

The Perfectly Standardized Car

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ANNULAR BALL BEARINGS

(Made in Germany)

The Dependable Kind—

J. S. BRETZ COMPANY

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give that kind of service which the buyer has a right to expect from chains which have been chosen because of their well-known quality; accuracy in pitch and durability being especially distinguishing features.

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CABLE

Is Absolutely Sure

Don't take chances on the wiring of your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

Just put on Packard Cable and forget all about your ignition troubles

NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY

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from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?

Van Wagner makes that kind.

Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. **WRITE US.**

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Rub a little GLASSO on your wind shield and you are sure of a clear vision. Rain, snow or mist slides off glass that has been polished with GLASSO like water off a duck's back.

A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasso will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

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is worth something. When you buy our castings you can rest secure in the knowledge that you can absolutely depend on them.

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and end your tire troubles before they begin

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Real Radiators

made of individual square tubes so much imitated in appearance, only.

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"K-B" Universal Joints

FOR

COMMERCIAL CARS

PLEASURE CARS

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Made from Drop Forgings and Case Hardened Throughout.

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Write today for copy
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means losing.

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MAXWELL CARS

1911 Line

Model E. A. Touring Car, 4-cylinder, 30 h. p., price, \$1350	
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Model I Touring Car, 4 " 25 " " 950	
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Model A. B. Runabout, 2 " 16 " " 600	

Maxwell-Briscoe Motor Co.

Licensed under Selden patent.

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Gasolene Storage Systems

Keep oil perfectly clean, safe and strong as when purchased.
Systems Suitable in Style, Size and Price—for your individual need.

We make the lowest priced and we make the best systems.

Write for our new book—34. It's free and of interest for you.

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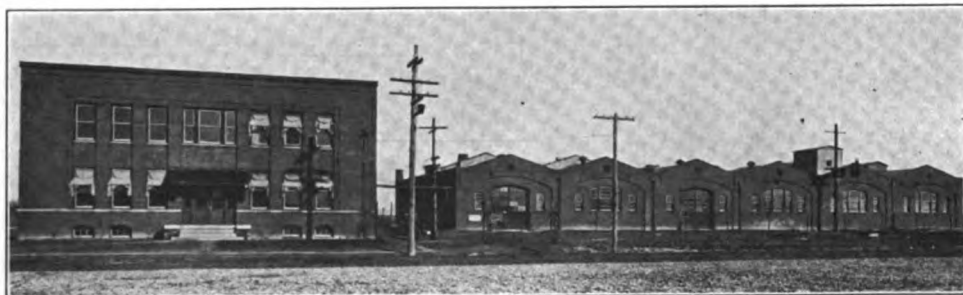
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year after year. Severest tests in
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Specify the Remy Magneto on your new
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of any metal and size desired,
including Bronze, Aluminum
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A PERFECT LIFTING DEVICE

That Adds New Comfort
and Economy to Motoring

The RAISWELL is the most unique accessory of the Season.

Radical in all its improvements it fully meets the urgent demand for a lifting device that does away with the crude drawbacks of the old-style jack.

All necessity of working under the car is at last done away with. That means no more physical discomfort—no more clothes ruined by contact with dirty, greasy fenders—no more time and temper lost.

With the RAISWELL you simply stand alongside the car—in an easy, natural position—and set the jack in place by means of its long reach handle.

Then, maintaining the same free position, you raise the axle—any height up to six inches—with a simple rotary motion of the brace-and-bit crank and with surprising ease.

The mechanical principle of the RAISWELL—altogether different from any other jack—is that of a gear and pinion combination, affording the remarkable power increase of 6 to 1.

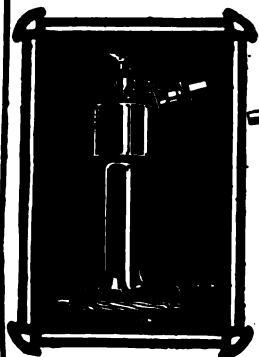
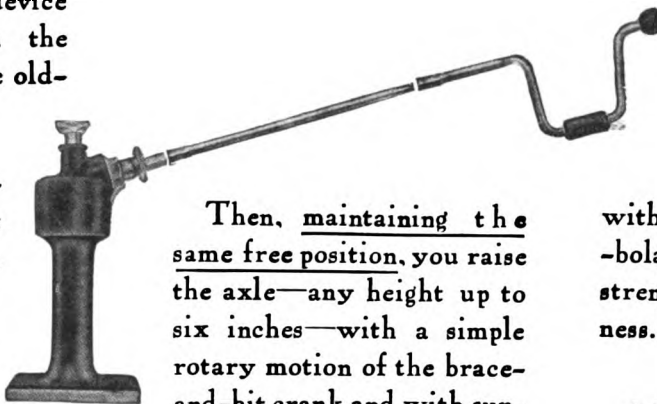
The interior parts, cut from hardened bar steel, are so snugly fitted that the RAISWELL will not wobble and

tilt its load—nor allow smut leakage—nor break under heavy weight.

Handsomely finished in black enamel and polished nickel, with handles of polished cocobola wood. A model of strength, symmetry, compactness.

Made by the Makers of the famous KLAXON, with the same care in the selection of only the highest grade of materials, and with characteristic KLAXON workmanship and perfection of details—the RAISWELL is guaranteed to last forever.

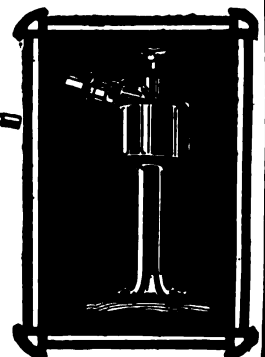
Shipped, express paid, anywhere in the United States, upon receipt of the regular price, \$10.00.



LOVELL McCONNELL MFG. CO.
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RAISWELL

"The Perfect Lifting Device"





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WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

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We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

Licensed under Selden patent.

THE MOTOR WORLD

A trade paper giving the
World's Motor News

Ten cents a copy—
Two dollars a year



Safety Demands SOLAR LAMPS

Nearly all the high-grade American cars are equipped with Solar Lamps.

Some manufacturers do not furnish them unless the buyer insists, because they cost more than common lamps.

We could build—and have been requested to build—cheaper lamps than the Solar, but we don't care to risk it.

A motorist's safety often depends on his lamps—these

should be absolutely reliable. We can't build a dependable lamp and sell it for less than Solars cost.

We don't care to take the risk of building lamps which may fail at a critical moment, causing disappointment, perhaps accident.

If you don't care to take this risk, insist that your car have Solar Lamps.

We will mail you descriptive catalog on request.

Badger Brass Mfg. Co.

Kenosha, Wis.

New York City

(104)



Four-fifths of the best dealers in the United States are United States dealers. Here are four mighty good reasons why:

- 1—Because everyone of them has a justifiable desire from the standpoints of both pride and profit to be connected with the biggest concern in the tire field.
- 2—Because they find it easy to turn into cash the strong established demand for these tires which exists from one end of the country to the other—a demand that is being daily and hourly added to by the biggest advertising and selling campaign ever launched by tire makers.
- 3—Because they realize that five separate factories and direct branches or agencies in every prominent city means an advantage in in the matter of distribution they can obtain nowhere else.
- 4—Because they know that the same fair and square business principles will guide the affairs of the new concern which have for years characterized the four separate organizations.

These present advantages, attractive as they may be, are but a promise of what the United States Tire Company has in future store for every dealer connected with the organization.

With a demand already established that far exceeds that for any other make or kind—

With an advertising and sales campaign now in progress more extensive than ever before attempted by a tire maker—

With a firmly established purpose on the part of the entire organization to keep for United States Tires and United States dealers their present recognized leadership in the tire field—

With all these forces working powerfully toward one object, it is no “far cry” to say that United States Dealers will absolutely control the tire situation in every city, town and hamlet in the country.

UNITED STATES TIRES

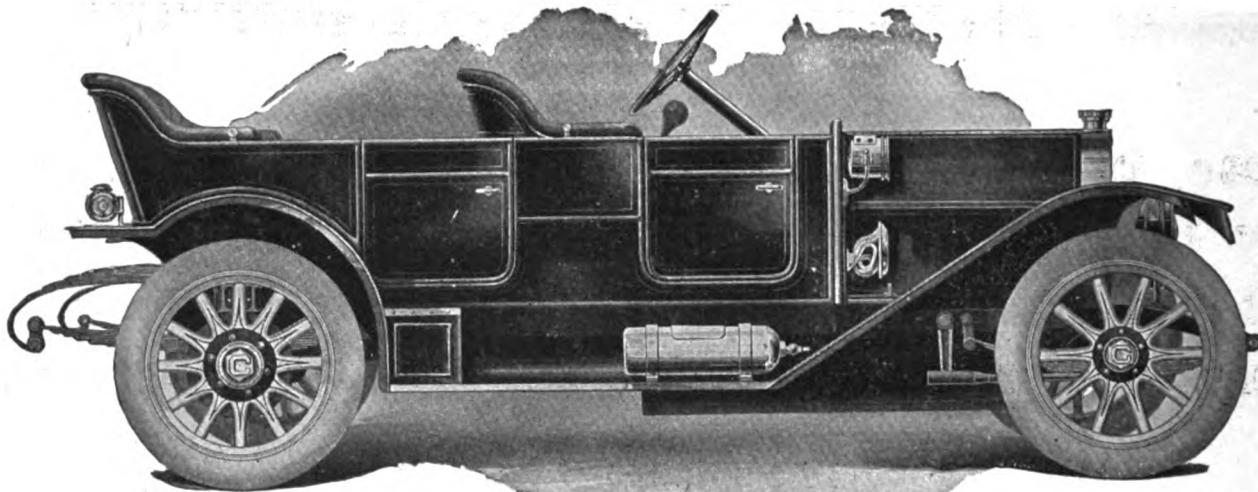
**Continental
G & J**

**Hartford
Morgan & Wright**

America's Predominant Tires

United States Tire Company

58th and Broadway, New York



Model H 5 Passenger Fore Door Touring Car—\$1750

COLBY

Built to Compete with \$3000 Cars

We wish to extend our thanks to the experts and others who have been so pronounced in proclaiming the Colby "40" the best motor car ever put on the market selling for less than \$2500.

It easily develops 5 to 50 miles an hour without overworking the motor, or causing any unpleasant vibration of the car.

The Colby is designed for comfort, as well as appearance, having the grace and beauty only found in high priced cars.

In our construction, we have used only the very best workmanship and material throughout. A glance at our specifications will prove it. Compare them with cars selling for three thousand and more.

We would be pleased to have the most skeptical call at our exhibit and be convinced.

SPECIFICATIONS

Body: Standard touring straight line. Seating capacity, five. Fore-door.
Motor: Four Cylinder—H. P., 35-40.
Bore, 4 1/4; stroke, 5 1/4. Cylinder "L" head—cast in pairs. Valve location—all on one side. Cycle, four.
Lubrication: System, circulating inside pump. Vertical shaft. Spiral driven pressure feed to crank case.
Cooling: Water cooled, centrifugal pump radiator, tubular fan, attached to engine, belt driven.

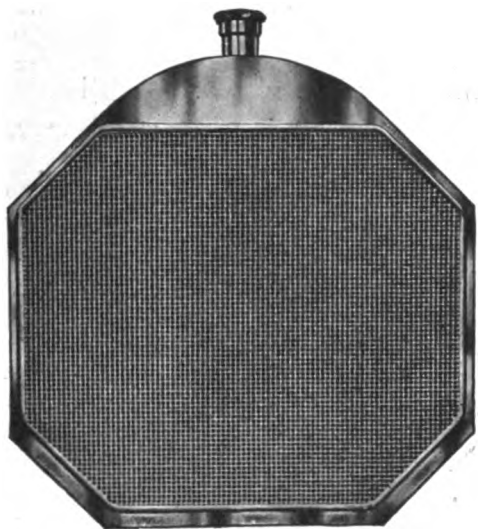
Ignition: Jump spark dual system.
Carburetor: Carburetor—special fuel feed—gravity.
Clutch: Type—multiple disc. Friction surfaces—steel to steel.
Gearset: Selective—located amidship. Three speeds forward.
Transmission System: Shaft drive through Torsion Tube. Rear axle—full floating.
Bearings: Crankshaft—three large, plain. Camshaft—three, plain. Clutch

—spindle, plain. Clutch, thrust, ball.
Gearset—F. & S. ball. Rear axle—F. & S. ball. Front wheels—ball.
Steering knuckle—plain. Steering gear—ball thrust. Plain bearings—Parson's white bronze.
Running Gear, Etc.: Wheelbase—121 inches—tread, 56. Wheels—10 spokes front, 12 rear. Tires—front and rear, 36 x 4. Front springs—Semi-elliptic. Rear springs—three-quarter scroll. Front axle—pressed steel, box type.

Brakes—expanding, service and emergency, internal on rear wheel. Frame—pressed steel.
Demountable Rims:
Equipment: Five lamps, generator, jack and tire repair kits, tools, sixty-mile-trip Speedometer, etc. Foot rail and coat rail. Top extra.
Control: Hand levers on steering wheel and foot accelerator.
Price: \$1,750, f. o. b. Mason City.

COLBY MOTOR CAR COMPANY, Mason City, Iowa

New York Representative—EMPIRE CITY AUTOMOBILE CO., 1800 Broadway.

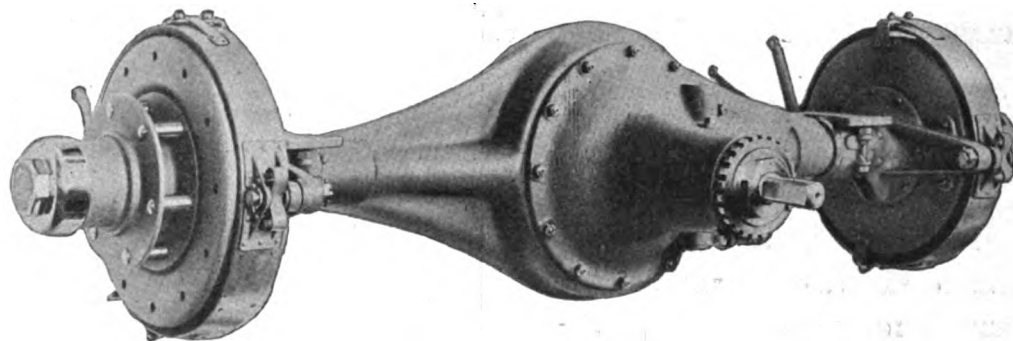


The Mayo—the radiator thoroughbred

¶ Precision is the watch-word in the Mayo Radiator shops.

¶ Mayo Radiators keep company only with the aristocrats of the mechanical world.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT



Full Floating Adjustable Type

¶ Driving member is inserted as a unit and may be adjusted in place.

¶ Housing is stamped from sheet steel. This construction provides strength at the points where the strain is the greatest.

¶ Internal and external brakes are 14 in. diameter.

¶ Axle Shafts are made from alloy steel "Heat Treated" so as to give the highest physical properties possible.

¶ Pinion and driving shaft are integral. Forged from alloy steel "Heat Treated." Teeth are planed.

¶ Can be equipped with annular or roller type bearings.

¶ The design, material and workmanship on this axle are of the highest quality.

Write Us Regarding Your Requirements

THE AMERICAN BALL BEARING CO.

L. S. & M. S. Ry. and Edgewater Park
CLEVELAND, OHIO

FISK

Removable Rim

The Fisk Removable Rim is the Rim which during three years' service, with thousands in practical use, has demonstrated our right to solicit your 1911 equipment.

We do not ask you to "try out" an experiment—something with which it is impossible to prove conditions after six months or a year of wear.

The Fisk Rim is Always Quick—Always Safe—Always Satisfactory. It never sticks nor binds; has no short staybolts, no excessive weight, and requires no special tools.

It is The Rim from which the tire cannot blow off and the one equipment which reduces inner tube expense.

Investigate and Compare. Send for Removable Rim Booklet.

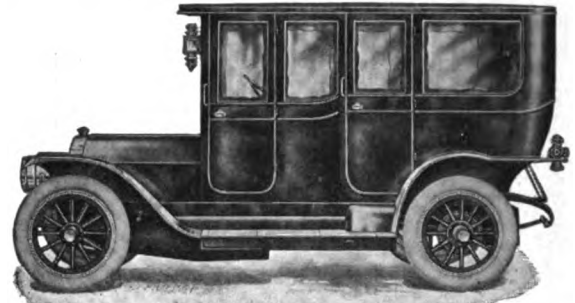
The Fisk Rubber Co.

Dept. 23 Chicopee Falls, Mass.

Direct Factory Service in 23 Cities

The Limousine is King in Winter

It is comfort, convenience and utility worked out in their highest motor development.



1911 Knox Model "R" 40 H. P., 7 Passenger, Fore-Door Limousine. Price, fully equipped, \$4400.

In this age of startling progress what a great convenience it would be if you could step into a richly furnished den in your home and, closing the door, be rapidly whisked to your destination.

It would be a service of unmeasured value.

Yet the Limousine car standing at your driveway door answers the same purpose. It is a miniature room with complete furnishings of a high grade, designed solely for comfort. Writing materials, mirror and toilet accessories, together with the smoker's electric cigar lighter and ash tray are all there. And the long glass vase for cut flowers gives the final pleasing touch to the whole interior.

The new KNOX FORE-DOOR LIMOUSINE expresses this detachable room idea to the utmost. It is built with the sole idea of restful comfort and untiring service. Comfort not only for the passengers but also for the driver. And it has a lasting quality that stays new.

Our new catalog will tell you more.

Knox Automobile Company
Springfield Massachusetts

Members A. L. A. M.

SPECIAL CONTEST Announcement

WE DESIRE TO ANNOUNCE the names of the winners in the STROMBERG STORY CONTEST. These stories were to be written by users of STROMBERG CARBURETORS, to be short, concise and interesting and submitted before February 1st, 1911. The purpose of this contest was to get us more in touch with the 81,000 users of STROMBERG CARBURETORS, and we are glad to announce that we were tremendously gratified with the flood of valuable information and universal appreciation which poured into our Contest Department.

Mr. Charles P. Root, formerly Editor of Motor Age, author of many valuable automobile text books, and President of the Illinois State Automobile Association, submits the following letter setting forth his findings in the story contest:

"Stromberg Carburetors are the best because they give the best results."

STROMBERG MOTOR DEVICES CO.,
64-68 East Twenty-fifth St., Chicago.

Chicago, March 3, 1911.

Gentlemen:—I beg to submit my award in your story contest wherein Stromberg Carburetors are prime factors. I must admit that it has been no easy task, because of the great number of contestants, and if you had had fifty more prizes they would have been well earned.

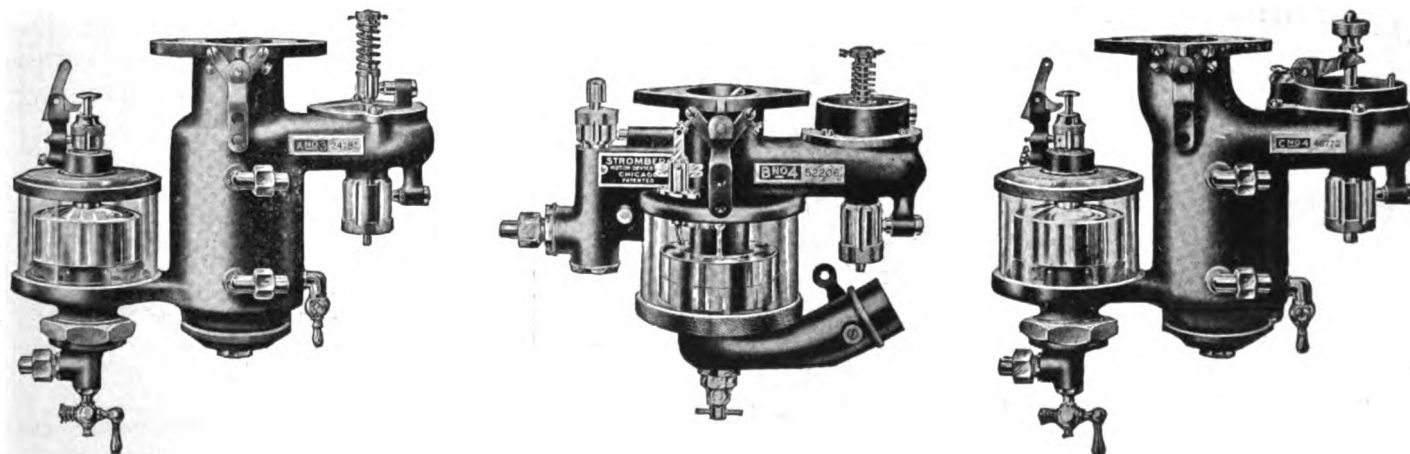
First prize, \$100—Mrs. James T. Kelly, Boston, Mass. Second prize, \$50—C. A. Bonce, Chicago, Ill. Third prize, \$25—D. C. Carson, New Haven, Conn. Ten prizes, each \$10—William Jones, Chattanooga, Tenn.; Warren Packard, Ithaca, N. Y.; Percy Fitch Rice, Tustin, Cal.; Frank H. June, Oak Park, Ill.; H. H. Cullum, Austin, Texas; G. J. Lasby, Eau Claire, Wis.; C. W. Armstrong, Calistoga, Cal.; Allen K. Stewart, Fort Madison, Ia.; T. D. Williams, Tucson, Ariz.; H. C. Shoemaker, Hutchinson, Kan.

Very respectfully submitted,

(Signed) CHAS. P. ROOT.

Many of these stories will soon be in print. We will be pleased to send them to anyone desiring same.

STROMBERG MOTOR DEVICES CO., 64-68 E. 25th St., Chicago



QUALITY AUTOMOBILES

WILL EQUIP WITH THE

Warner AUTO-METER for 1911

Makers who feel a personal responsibility for the reliability and dependability of the accessories used on their cars are either equipping with the Warner Auto-Meter for 1911 or are recommending it as an EXTRA because of its supreme excellence.

Many makers have gone so far as to attach Auto-Meter driving gears at their factories so as to be able to attach an Auto-Meter in a few minutes when a customer specifies it.

Every automobile manufacturer of note in the United States acknowledges the superiority of the Warner Auto-Meter by using bought-and-paid-for Warners on his personal cars, on his racing machines, and on every car where an accurate record is wanted, and where "within a few miles per hour of right" is not close enough.

Some of these makers offer other instruments for sale through their branches, because—as they say themselves—they fear the buyer of a popular-priced car will not appreciate or cannot afford the Auto-Meter, as it costs from three to five times as much as other "speed indicators."

Yet, even so, the Auto-Meter is by far the cheapest if you figure the price by miles of travel or years of service. The first Auto-Meters made, over eight years old—are as sturdy, reliable and accurate as when new.

If the maker of your favorite car does not equip with the Auto-Meter, it will be wise judgment on your part to pay for it—or pay the difference, if you can afford Quality and care for the trouble-proof satisfaction which goes with it.

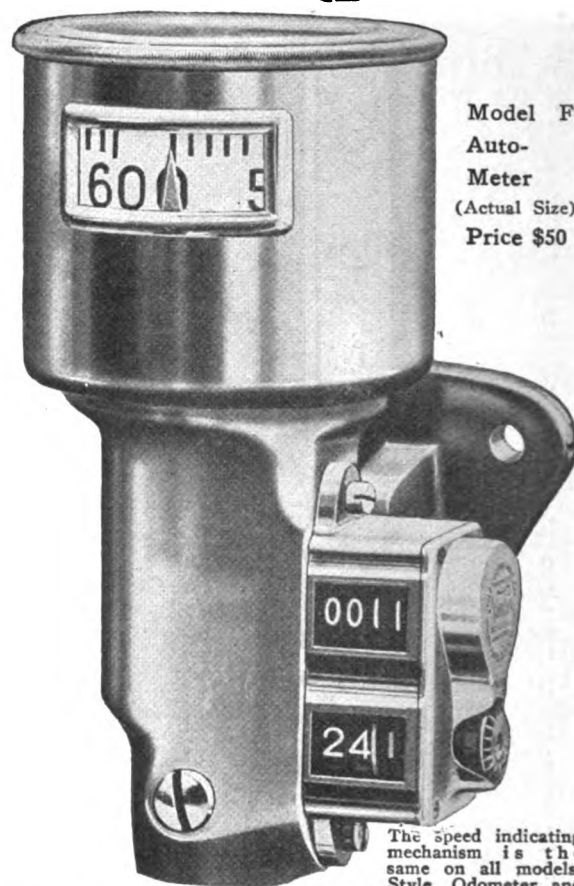
Warner Instrument Company

1094 Wheeler Ave., BELOIT, WIS.

BRANCHES

ATLANTA, 116 Edgewood Ave.	KANSAS CITY, 1613 Grand Ave.
BOSTON, 925 Boylston St.	LOS ANGELES, 748 S. Olive St.
BUFFALO, 720 Main St.	NEW YORK, 1902 Broadway
CHICAGO, 2420 Michigan Ave.	PHILADELPHIA, 302 N. Broad St.
CINCINNATI, 807 Main St.	PITTSBURG, 5940 Kirkwood St.
CLEVELAND, 2062 Euclid Ave.	PORTLAND, ORE., 14 N. Seventh St.
DENVER, 1518 Broadway	SAN FRANCISCO, 36-38 Van Ness Ave.
DETROIT, 870 Woodward Ave.	SEATTLE, 611 E. Pike St.
INDIANAPOLIS, 330 1/2 N. Illinois St.	ST. LOUIS, 3923 Olive St.

(92)



Model F
Auto-Meter
(Actual Size)
Price \$50

The speed indicating mechanism is the same on all models. Style, Odometer and finish only are different.

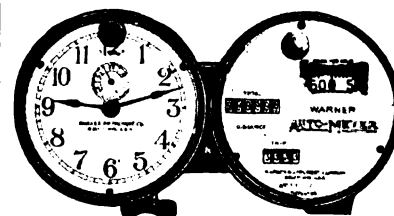


Model K

This represents the open-face type of Auto-Meter with Warner large-figure Odometer. Season, 100,000 miles and repeat; trip, 1,000 miles and repeat. It is the most popular model and by far the best seller. Price, \$75

Same as above, but with Chelsea Auto Clock (MODEL M). Price \$125

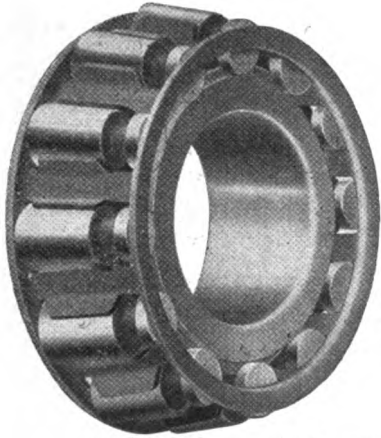
Model O—"The Twins"



This is the same instrument as Models K and M, with large Chelsea Auto Clock.

Has the Warner large-figure Odometer. The ultimate in high-class instrument making. Price, \$145

Any of the above designs can be secured with 100-mile speed dial at a slight advance in price.



Once Timken Always Timken

¶ If by far the large majority of Automobile Builders of the Country agree upon any point of automobile design, there is extreme probability that they are right about it—and those who do not agree are wrong.

¶ The supremacy of TIMKEN ROLLER BEARINGS is admitted by most of the Automobile Builders in America—and those who do not use TIMKENS only say that what they do use are “just as good.”

¶ When over 80 per cent. of high grade manufacturers of automobiles have discarded other bearings for the TIMKEN—and when no automobile builder has ever discarded TIMKEN ROLLER BEARINGS, due to unsatisfactory service, there must be good reason for this.

THE TIMKEN ROLLER BEARING CO.

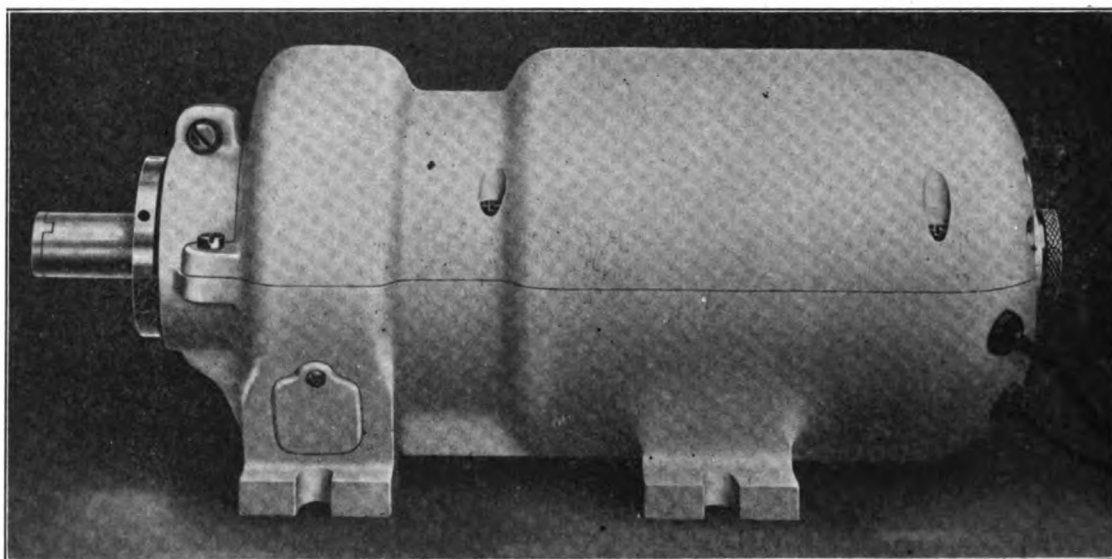
CANTON, OHIO, U. S. A.

Lighting Dynamo

MADE BY

GRAY & DAVIS

Just as easy to operate, as convenient and efficient as the electric lighting system in your home or office. Get this dynamo for your car—be up-to-date—a little ahead of the times.



Small, Compact—Weighs But 19½ Pounds. A Little Larger in Size Than a Magneto

The Gray & Davis Lighting Dynamo charges your batteries when car is running during the day and "TAPERS" the charge so that when your batteries are fully charged, the current is reduced to a minimum.

At night, you light one or all your lamps, irrespective of the battery.

The **ONLY** System that is not simply a "battery charger"—the only dynamo which operates independently of your battery—the only system which will do what a lighting dynamo **SHOULD** do.

Compound Wound when lighting lamps. Shunt Wound when charging batteries. Constant Speed—governor takes care of excessive speed. Absolutely reliable—endorsed by the most eminent engineers.

*Write to-day for very interesting catalog, describing the
Lighting Dynamo and Gray & Davis automobile lamps.*

GRAY & DAVIS Manufacturers of Automobile Lamps **Amesbury, Mass.**

Chalmers Talk Number One

This monogram on the radiator
stands for all you can ask
in a motor car.

AN automobile is not an extravagance. It is an economy. It increases your efficiency. It makes "two minutes grow for you where only one grew before." Some extravagant people buy automobiles, but not very many. Only a few really extravagant people ever can afford to buy them. They spend their money for less useful things. Think that over.

The automobile industry is now the third in the country in point of volume and is still growing. The everyday, sensible, careful-buying business man has made this volume possible. If the motor car was an extravagance he would soon find it out—and quit buying. But he goes on buying. He sees that the motor car is a necessity.

"Forty" \$2750



Each year the Chalmers Motor Company has had more orders than it could fill. We have, already this season, shipped to customers more than 60 per cent of our 1911 output. The remainder is going fast. We take these conditions to mean that we have succeeded in building cars that appeal to the careful business buyers of the country as unusual value at their prices. "30"—\$1,500. "Forty"—\$2,750. All types. Dealers in all leading cities.

CHALMERS MOTOR COMPANY

Detroit, Michigan

SPLITDORF VICTORIOUS

At the Mardi Gras Speed Carnival New Orleans, February 25-26

Burman in a SPLITDORF equipped Buick won a brilliant victory in a quintette of hotly contested races.

Event.	Car.	Driver.	Magneto.	Time.
10 Miles, Handicap, Free-for-all	Buick	Burman	SPLITDORF	10:18
10 Miles, 301-600 cubic inches.....	Buick	Burman	SPLITDORF	10:04
5 Miles, Free-for-all	Buick	Burman	SPLITDORF	4:50
10 Miles, Handicap, Free-for-all	Buick	Burman	SPLITDORF	9:44
One Hour Race, 600 cubic inches.....	Buick	Burman	SPLITDORF	57 Miles

These splendid triumphs, following closely upon the winning of the Panama-Pacific Road Contest at San Leandro, February 22, by Merz in a SPLITDORF equipped National—152 miles in 138.20—again prove the wonderful efficiency of the

Splitdorf Magneto

SPLITDORF users have Perfect Ignition day after day—Why not have the same satisfactory service yourself?

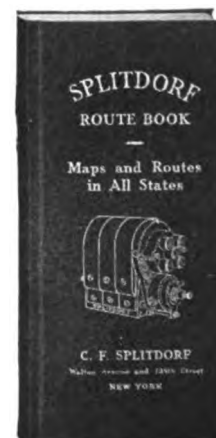
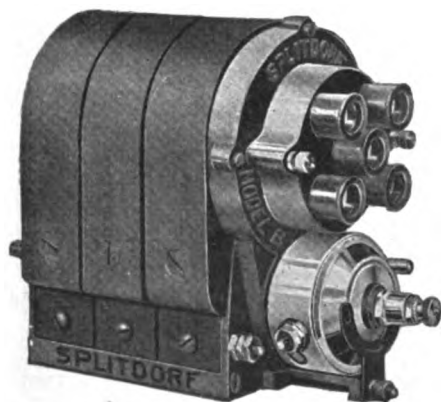
Please write for Magneto catalog

Spring Touring

Have you received a copy of the SPLITDORF Route Book?

Every tourist should have one. Contains 144 pages, with 14 maps and 605 most popular routes in the United States. Handsomely bound in leatherette.

Sent from main office or any of our branches postpaid on receipt of 25c. to cover cost.



Chicago: 319 Michigan Ave.
San Francisco: 520 Van Ness Ave.
Detroit: 868 Woodward Ave.
Boston: Motor Mart.
Los Angeles: 1226 S. Olive St.

Branch
1679 Broadway

C. F. SPLITDORF

Walton Ave. and 138th St., NEW YORK

Sampson

Freight and Delivery **Motors**



There are three important questions to ask us about trucks.

First—Why is it a good truck?

Second—What responsibility is behind it?

Third—What service do you give?

First The Sampson is a good truck because it was designed by a transportation engineer and specialist. He spent \$600,000 perfecting it before selling it.

His trucks were operated by disinterested men and driven by teamsters in actual intercity service for fifteen months in order to test them under actual commercial conditions.

These Facts Prove Him Right

Every Sampson Truck has given complete satisfaction.

No Sampson truck has ever cost for repairs more than \$30, or has ever been returned to the factory.

The oldest Sampson in service is four years old. We expect years of further service from it.

Second The responsibility behind it is an investment of millions and a thoroughly developed organization. The Alden Sampson Manufacturing Company organized in 1904, has a capital of \$2,500,000, has the biggest truck factory in the world and builds the only complete line of trucks made. It is the truck division of the United States Motor Company, a \$30,000,000 organization.

It has vast resources to conduct investigations, to build thoroughly, to deliver economically and to maintain efficiently.

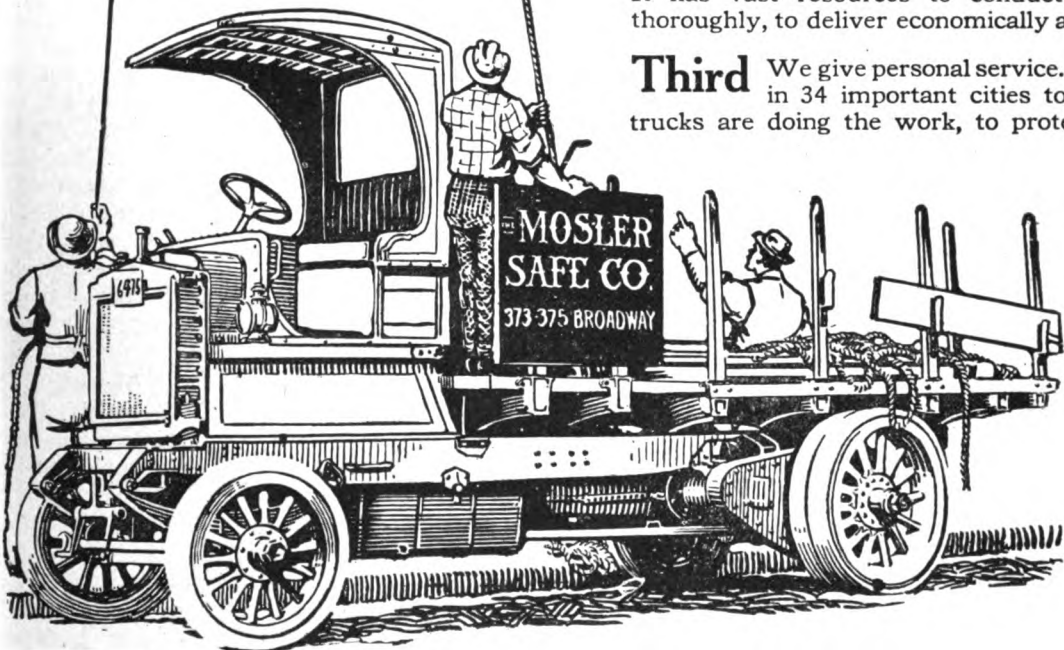
Third We give personal service. We have branch houses in 34 important cities to see personally that the trucks are doing the work, to protect them from improper use, to eliminate the necessity of dealing with middlemen who may not continue in business.

This Sampson 5-ton truck delivers safes and hoists them by its own power in one-half the time formerly required. Any Sampson can be equipped with devices to utilize its power similarly.

A New England Manufacturer

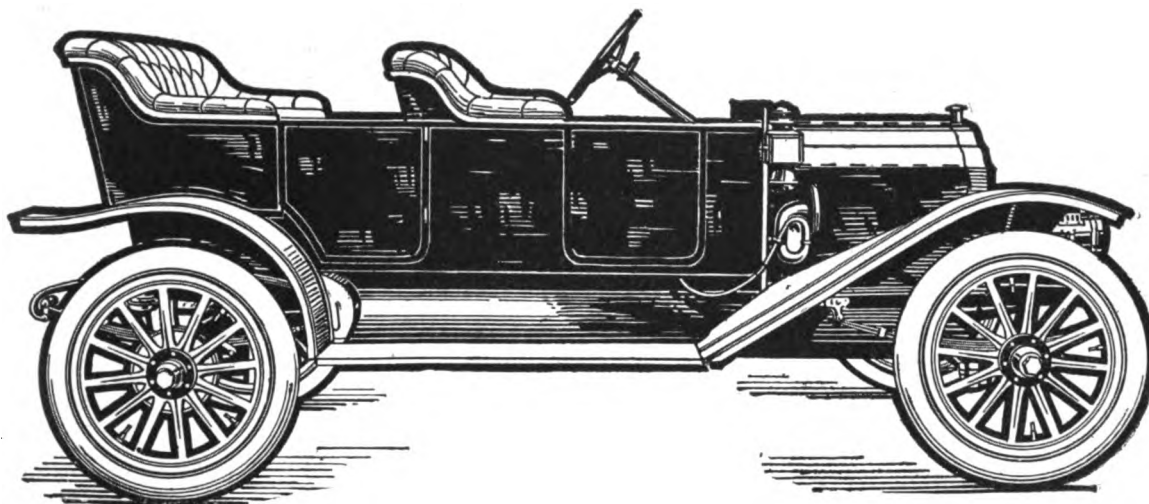
known nationally spent \$7,000 and three years' time investigating motor trucks—sending his engineers to every big truck factory, to every truck show, to examine scores of trucks in actual service.

He selected the Sampson and says
"It's the Best Truck in America"



ALDEN SAMPSON MANUFACTURING COMPANY 2714 Rhode Island Ave. DETROIT, MICH.

The E-M-F Company Announces A Flanders "20" Fore-Door Model



\$800

With 3-Speed Selective Transmission

EVER SINCE THE ADVENT of the famous Flanders "20" nearly two years ago, we have been deluged with requests for a touring body on this sterling light chassis. These requests came from thousands of good folk who felt they could not afford or didn't care to put \$1,000 or more into an automobile—of course, at \$1,000 there's only one choice—E-M-F "30."

TRUE, THERE WERE OTHERS—several makes of cars selling for less than \$1,000 and equipped with "touring" bodies. But in the eyes of discriminating buyers these possessed disadvantages that left them out of consideration—for example: inadequate power and chassis strength; two-speed transmissions—and mostly of the power-consuming, noisy "planetary" type. The planetary transmission may be "fool proof" as claimed—but it does not appeal to the mechanically well informed.

FLANDERS "20" DIDN'T BELONG to that class of cars at all. When Engineer Heaslet undertook to design this model for the E-M-F Company he set himself a high standard—that of creating a chassis of medium size that should combine all those features which heretofore had been considered obtainable only in cars selling for four times as much as Mr. Flanders proposed to ask for this car.

THAT HE SUCCEEDED IS HISTORY. True, Flanders "20" in its first few months of existence had to pass through most of the infantile troubles that every new model, no matter by whom designed, must pass through before it reaches that state of perfection that is the designer's ambition. Flanders "20" had its teething troubles, then the measles, mumps and a slight attack of the whooping cough—that last is automobile language for carburetor crankiness.

PERHAPS THIS SURPRISES YOU—this brutal frankness of ours. It is the despair of our competitors. They never can understand why it does not injure us irreparably to tell the public what they consider factory secrets. Confidentially, we believe this is the secret of our success. We are dealing with intelligent people—practical business men for the most part. Infallibility is not to be hoped for in human beings. So it has always been our policy to speak frankly to readers of our ads. It not only disarms unfair competition, but has won for us a confidence on the part of buyers that we consider our chief asset.

YES, FLANDERS "20" HAD ITS TROUBLES in the early days. But—and here's what you are mostly interested in—every Flanders "20" car sold carried with it a full year's guar-

antee by a company worth several millions of dollars. Not only that, but the buyer knew that the men who signed that guarantee were not in the habit of splitting hairs—would make good not only the letter but the spirit of that guarantee. And we did—to such an extent that there are today 7,000 boosters of this car—satisfied owners.

WHILE WE ARE ON THIS SUBJECT let's go back three years. E-M-F "30" was then in its first year. It also had its infantile aches and pains. This company was new then, but the men at the head of it realized that permanent success depended absolutely on backing up our product in the most liberal manner. We had expected small weaknesses to develop during the first few weeks that the new model was on the roads in hands of owners. Why? Past experience—which teaches us that, no matter how severely a new model may be tested by factory experts, defects will develop when 500 cars are in hands of owners operating under 500 different sets of conditions—defects that no one could possibly have foreseen or provided against. That's the reason for a manufacturer's guarantee—and before you buy any new model—ours or the other fellow's, let us warn you to look well to the kind of guarantee that goes with it, and particularly to the character of the men or the firm that signs it.

WHAT A MARVELOUS RECORD E-M-F "30" has made since that—nothing like it has been known in automobile history. For three years it has been first choice of discriminating buyers and every car has been sold, not by a salesman, but by another owner. And so well did we take care of those first 500 cars, any man who now owns one of that famous first litter to which "Old Bullet" belonged, staunchly claims he has as good a car as we have ever turned out since.

FLANDERS "20" REPEATED HISTORY—that's all. And today we are able to say of this great little car it is as good as its older brother E-M-F "30"—and more could not be said of any automobile.

BUT ABOUT THAT TOURING MODEL. Until recently we have turned a deaf ear to the entreaties of dealers and individual admirers alike—those who wanted a Flanders "20" touring car. The reasons have been set forth above. We had determined first to give the car a full year in hands of owners with the lighter runabout and suburban bodies—watch the performance of every car carefully, and make improvements or refinements wherever opportunity occurred.

SHE IS IN HER SECOND YEAR NOW—infantile diseases long since passed and every defect however slight—whether in mechanical construction or merely in exterior appearance—has been corrected and such improvements made as the progress of the science of automobile making and steel treatment has made possible. Today we are able to say—and back it up with that same guarantee—that in all the world there is nowhere else such value to be had in a car of this type as in the Fore-Door Flanders "20."

THE RULE WE HAVE WORKED TO in perfecting this light car model has been "when in doubt make it like E-M-F "30"—a rule some of our esteemed competitors have emulated assiduously of late, by the way. You'll find, therefore, many points of similarity in the two cars—and that alone is guarantee of the excellence of the new Flanders "20" model.

ONE FACTOR THAT HAS HELPED in this process of improvement has been the drop in prices of materials—which we predicted in a recent E-M-F ad. and were so roundly scored for by competitors who thought it was bad for the public to be advised of that fact. For example, aluminum is much cheaper today than two years ago. Result, we are able to use that semi-precious metal in the motor crank-case and transmission housing of Flanders "20" now, whereas it was absolutely out of the question then. We reduce the weight very considerably by using aluminum.

THE THREE-SPEED, SELECTIVE TRANSMISSION is another feature that will appeal strongly to the experienced. For the runabout models the two-speeds are all right, but it's a mistake and a grievous one in any touring car. Not only does it interfere with the pleasurable operation of the car—and every Flanders "20" owner drives his own car—but it subjects motor and transmission mechanisms to undue strains when starting or climbing hills or negotiating very bad stretches of roads. It won't do.

WHEEL BASE IS 102 INCHES—only 6 inches shorter than the larger model. Ample room for five large adult passengers and longer than other car of similar class. Weight, only 1600 pounds, and as this "20" horse-power motor actually develops about 25% more power than its rating you have power to carry you anywhere at as rapid a pace as you will ever care to go. And she's a wonderful hill climber.

LESSER IMPROVEMENTS ARE:—Detaching exhaust manifold. Formerly, cast integral with the cylinders this feature developed defects similar to those from which other makes of higher priced cars, which also adopted this foreign idea last year, are still suffering. You don't know which ones? Ask your dealer.

CARBURETOR HAS BEEN PERFECTED so as to give still wider range of flexibility and with simpler adjustment—similar to E-M-F "30." Flanders "20" carburetor now gives uniform results in mile-high Denver and sea-level Florida.

WORM AND WORM-WHEEL STEERING has been adopted in place of the former internal-gear device. Absolutely irreversible. Four times longer lived—because four times as much wearing surface. Also adjustable for wear. Equal in every way to that of E-M-F "30."

MAGNETO AND COIL are part of standard equipment of course—Splitdorf, and attached same as on the larger car. Accessible. So are several other parts that formerly were a trifle difficult to get at. Radiator is raised slightly so the starting crank no longer goes through the radiator. Looks better, that's all. Cooling properties of this car always were ideal. Rear axle has been made heavier to support the heavier passenger load. Double strut rods. Brakes twice as wide as before—will slide the wheels on any surface yet won't chatter nor jerk no matter how severely applied. Lined with thermoid.

SEVERAL OTHER MINOR POINTS have been refined—improved is hardly the word, for there was nothing to be desired in efficiency. Still, there was one point—valve action—where not only refinement was possible, but about 20 per cent. increase in power was obtained.

THINK HOW MUCH WISER IT IS for a concern to adhere to standard models and improve from year to year as we have done with Flanders "20" and E-M-F "30" rather than to constantly chase false gods and offer radically new models to the buying public as fast as the seasons roll round.

IS IT ANY WONDER other concerns are trailing in the rear while the E-M-F Company continues to set the pace and constantly increases the distance between? You know the A. L. A. M. report for the last quarter of 1910, just issued, showed the E-M-F Company to be the largest producer of automobiles in the world. Those figures cannot be refuted. And the chief reason is we do not run away from our troubles, but make good to every buyer—and we get our share of the unreasonable ones—and continue to improve and refine our product far in advance of the times and the demands of buyers.

NOW ABOUT THAT FORE-DOOR MODEL. First, let us say this body is not a makeshift one, designed to fit a runabout and be interchangeable. Not at all. It is specially designed for this chassis which, as we have shown above, had been designed to receive it. Ample seating capacity and just as well trimmed and finished—just as many coats of varnish and same quality leather and hair as that used in E-M-F "30."

THE PRICE—\$800—IS SENSATIONAL—leaves no real competition for this car in the field. Meets exactly the needs of buyers who just can't quite reach E-M-F "30"—and gives them a car made of exactly the same materials, by the same wonderful organization and backed by the same guarantee as E-M-F "30"—just a size smaller, that's all.

NOW NOTE THIS CAREFULLY. Deliveries on this fore-door model will not begin until on or about April 1st. And at first they will not come very rapidly—naturally. Orders ahead for Flanders "20" runabouts and roadsters must be taken care of. This requires a large part of the factory equipment and organization.

BESIDES, IT BECAME NOISED ABOUT—despite our efforts to keep silent about this model until ready to deliver them in quantities—that this Fore-Door Flanders "20" was coming out, and astute dealers and buyers have already sent in tentative orders for several hundred cars—unsight and unseen and without knowing just what the price would be. Knew it would be right, of course, knowing the E-M-F Company.

SO YOU SEE YOU'LL HAVE TO TAKE YOUR TURN in the line just as those thousands have had to do in the past who wanted E-M-F "30" or Flanders "20" cars. Order at once. Pay down a deposit and have your dealer assign you a definite delivery date. Then you will not be disappointed.

THE OBJECT OF THIS ADVERTISEMENT is not so much to sell these cars—word of mouth information among present owners would sell the entire output as fast as we could get them out. But we wanted to give everybody a fair start—dealers and individual buyers alike. So this is the first official word about this model and you can rest assured there will be no favoritism—first in line first served and with absolute impartiality as in the past.

HERE'S ANOTHER SURPRISE—We did intend to reserve it for another ad., but it won't be necessary. We will begin on April 1st to deliver a new Fore-Door E-M-F "30." Will be ready to take care of the demand by that date we hope. Chassis unchanged in any detail—same famous car in every particular save only the body which we think is the neatest, nattiest, "classiest" thing of the kind yet produced. Price will be \$1,100—watch 'em scramble!

Write for Descriptive Booklet No. 16

THE E-M-F COMPANY, Automobile Manufacturers, Detroit, Mich.

DTA

Little Chapters of Quality

Chapter the Fourth

Size is not an evidence of quality. There are many cars of medium weight and medium size that are strictly high grade.

The Number 530 Rear Axle illustrated below is the lightest type of Timken-Detroit quality Axle. It is built and designed especially for the high grade, medium size car.

Quality does not necessarily mean high price.

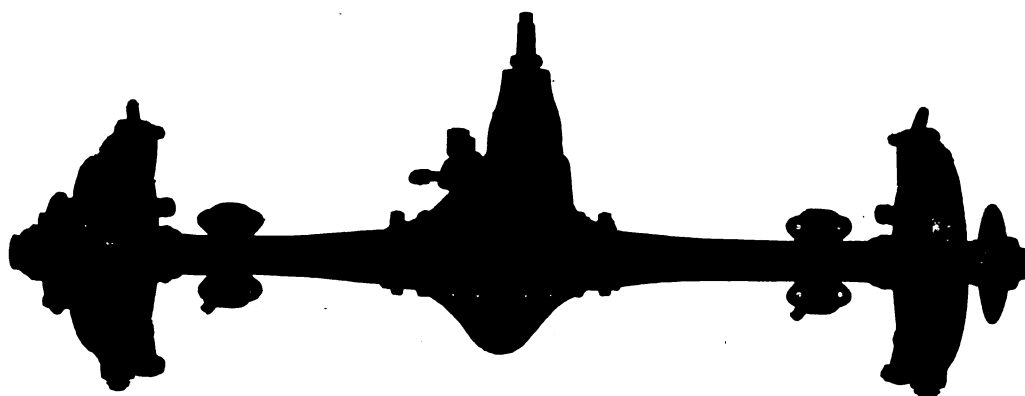
On the other hand, a cheap product is usually expensive to anyone who has anything to do with it.

Discriminating buyers will take into consideration the reputation of the manufacturer, his skill, experience, and the quality of the product. The names of manufacturers using Timken-Detroit Quality products present an unanswerable argument.

Full details will be gladly furnished.

The Timken-Detroit Axle Co.

Detroit, Michigan, U. S. A.



DTA

UNDISPUTED LEADERSHIP

In the Things That Mean REAL Tire Service and REAL Tire Economy, Goes to

"Firestone" TIRES and RIMS

58% more exhibitors at the Boston Auto Show used on their cars Firestone Quick-Detachable Demountable Rims than nearest competing make.

Lead In
Demountable
Rims

Experienced dealers and car owners demand a **time-tried** demountable rim (not an experimental device) to carry their spare tires inflated, ready for instant change. Furthermore, they demand a demountable rim that has an **unbroken** base—not a **split base**, that admits water into the tires and rots them.

They demand a rim that **saves your tires** as well as your time and effort in changing them.

74% more trucks at the New York, Chicago and Boston shows combined, carried Firestone Side-Wire tires than nearest competing make. There were in all 87 sets of Firestone tires and 50, 45, 41, 38 sets, and so on down, of the 18 competing makes.

Lead In
Motor Truck
Tires

Every exhibitor using Firestone tires could have had competing tires instead, **at a 50% to 60% cut in price**, if he had been willing to compromise the tire service and satisfaction of the buyers of his trucks.

100% of the quick removable solid rubber tires and rims in **actual service** at any automobile show (or anywhere else) are Firestone. In other words, the **only** improvement of this kind that exists beyond a show-display sample, is the Firestone Quick-Removable Side-Wire tires and rims—two years in successful use.

In Quick
Removable
Truck
Tires

They ensure quick tire changes for your trucks **right on the spot**, without lay-up for tire repair or replacement. They facilitate removal of injured tires at will, to have them repaired or rebuilt before too far gone. Firestone users save many thousands of dollars annually by such repairs—an **exclusive** feature of the **side-wire** tire.

FIRESTONE PNEUMATIC TIRES

like Firestone Rims and Solid Tires, are the **UNDISPUTED LEADERS** in constructive details and wearing quality—the highest example of specialized tire manufacture—the product of the largest exclusive tire and rim makers in America.

THE FIRESTONE TIRE & RUBBER COMPANY, Akron, Ohio

"America's Largest Exclusive
Tire and Rim Makers"

Branches, Agencies and
Dealers Everywhere

Overland

No other manufacturer can produce the car described below—sell it at the price we ask, and make a profit

We know that our Model 51 at \$1250 is the best motor car value on earth. And a little comparison will prove this to your own satisfaction.

Take this Overland model and compare it with any of the \$1500 and \$1700 cars on the market. Make your comparisons thoroughly, part by part. The more thorough your investigation, the stronger your conviction will be that the Overland is the car to buy.

Compare the springs and riding qualities, the speed, the hill climbing ability, the wheelbase, the frame, transmission, brakes, rear system, size of wheels and axle, steering gear. Compare the finish, upholstery, the body design and workmanship. You'll find that Overland fore door models are designed and built as fore door models, not old bodies patched up to meet the prevailing style, with shifting lever and emergency brake outside and out of reach.

Consider, and bear this point in mind always, that the Overland is a manufactured car, every part and every piece made by us, after our own designs, by our own men, in our own plants.

You'll find too, that the Overland is a thoroughly standardized car. Each operation on that part is made by an expert workman on that particular thing, by special machinery in a special "jig," from the best material.

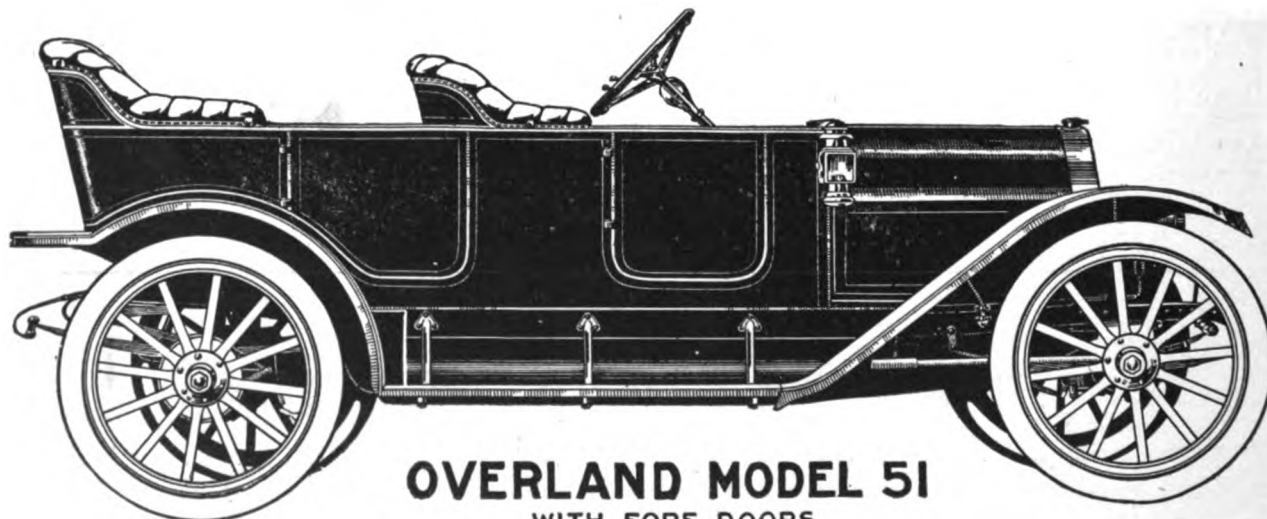
Each cylinder, gear, shaft, bearing, axle, frame, transmission, body, etc., etc., is exactly like the other in the same Overland chassis. No fitting, grinding or filing is necessary or permitted in the final assembly.

On parts like crank shafts, cam shafts, etc., we work as close as one-half thousandth part of an inch. One one-thousandth part of an inch limit of tolerance is common practice in Overland construction.

We could make them more extravagantly, but we cannot make them better.

The production of Overland Cars for 1911 will be 20,000. We make only five chassis—22 body styles, with or without fore doors. No extra charge for fore doors.

We have prepared a sheet of comparative data, tabulating specifications of Overland Cars with America's best in their class. Write for this sheet and catalog I.



A big handsome car of masterful design. The four-cylinder, thirty horsepower motor of this car is a marvel of efficiency, flexibility, and quietness. 110 inch wheelbase—\$1250.

THE WILLYS-OVERLAND COMPANY, Toledo, Ohio



CROXTON HEADS CONSOLIDATED

Takes His Company Into Ohio Merger and Becomes Its President—Other Officials are Shifted About.

One of the reasons which had to do with the recent removal of the Croxton Motor Co. from Massillon, O., to Cleveland, O., was disclosed early this week when it was announced that the Croxton company had become a part of the Consolidated Motor Car Co. of Cleveland.

The Croxton influence in the matter was such that at a meeting on Saturday last H. A. Croxton was elected president and general manager of the Consolidated company, succeeding E. D. Shurmer, of the Royal Tourist Motor Co., who, in turn, displaced A. H. Bedell as treasurer. J. P. Stoltz, of the Croxton company, became second vice-president of the Consolidated organization; the only officers who remained undisturbed were H. F. Gill, first vice-president, and W. D. Forsyth, secretary. The directorate also underwent some changes, O. M. Safford and F. W. Scott, of Cleveland, both retiring. The new directors who were chosen are Henry A. Grubb, of New York, and A. H. Bedell and H. N. Hill, of Cleveland. F. C. Cain was the only director who held over. C. W. Fuller, of Cleveland, the attorney who engineered the original movement, was retained as general counsel.

The Consolidated Motor Car Co., which is capitalized at \$4,000,000, was started as a holding corporation with the Royal Tourist Motor Co. as a nucleus. In December last it was announced that the Pennsylvania Auto Motor Co., of Bryn Mawr, Pa., has been acquired, but the report caused considerable confusion and ultimately was denied by the Auto Motor people. That they have not yet been brought into line is indicated by the latest authoritative information from Consolidated sources, which names only the Royal

and the Croxton companies and the Acme Body and Veneer Co., of Rahway, N. J., as the properties which are included in the merger. Unofficial advices, however, state that negotiations for the Pennsylvania Auto Motor Co. have not been entirely abandoned and that the Acme Motor Car Co., of Reading, Pa., and several parts companies are being dickered with.

Son's Father Takes Nine Judgments.

Ten judgments, aggregating \$251,742, have been obtained by default in the New York Supreme Court against the Manhattan Screw and Stamping Works, West End avenue and 67th street, New York. Nine of the judgments, aggregating \$194,725, are in favor of Francis L. Leland on nine notes made between Feb. 1, 1909 and Jan. 19, 1911, and one judgment for \$57,017 in favor of Thomas A. Painter on six notes made between May 8, 1908, and May 28, 1910. Executions were issued on four of the judgments for \$155,653, in favor of Mr. Leland, who is president of the New York County National Bank and whose son, Louis F. Leland, was president and treasurer of the Manhattan concern, which is a \$200,000 corporation, which manufactured lamps and other automobile accessories.

Klaxon and Jones Settle Their Suits.

Litigation between Joseph W. Jones, maker of the Jones electric horn, and the United Manufacturers, who marketed it, on one side, and the Lovell-McConnell Mfg. Co., makers of the Klaxon horn, on the other side, has been amicably settled. Jones and the United Manufacturers have acknowledged the validity of the Klaxon patents and Jones will discontinue the production of the horn bearing his name. By the terms of settlement, Jones and the United Manufacturers not only recognize the validity of the Klaxon patents, but consent to the issuance of final decrees and permanent injunctions against them in the suits for infringement brought by the Lovell-McConnell company, which now are pending in the United States Circuit Court in New York City.

TO HOLD SHOWS IN BOTH CITIES

New Independent Association Declares for Separate Show in Chicago as well as New York—Raps N. A. A. M.

Despite the defeat of the Selden patent and the ensuing effort to "unify the trade," there will not only be, as usual, two national shows in New York next year, but there will be two in Chicago also.

This announcement was made late last week, following a meeting of the Automobile Manufacturers' Association of America in the office which it recently established in the Night and Day Bank building in New York. It was the first meeting the organization has held since it was formed by 23 of the exhibitors at the Grand Central Palace show in New York in January last. It was not largely attended, but the intention to hold an "independent" show in Chicago as well as in New York evidently had been well matured as it is stated that "a suitable building already has been secured" in the Western metropolis. In New York, of course, Grand Central Palace again will be used, but it will be the new and much handsomer building which has been erected at Lexington avenue and 45th street. The automobile show, which will open January 1st, probably will inaugurate the new structure.

After last week's meeting of the new association, Herbert Longendyke, who organized it and who now is its general manager, issued a statement making known the decision to hold shows in both cities, and incidentally rapping both of the older national associations. In the course of this statement he said:

"When this association was originally incorporated under the laws of the state of New York, on January 7, 1911, one of its chief objects was to protect its members by every legal means and to combat the attitude of the Association of Licensed Automobile Manufacturers who were ap-

parently trying to limit the production of the Independent Automobile Manufacturers.

"The association was hardly organized, however, when the United States Circuit Court of Appeals overthrew the claims of the Selden patent, and to the uninitiated it might appear as if there was no longer any necessity or need of an independent association.

"That this idea is premature and erroneous is shown by the attitude of the Licensed Association, which, judging from reports in the trade papers, is looking for other patents with which to build a practical monopoly, and hold up the entire industry.

"Outside of this there is not the slightest reason to suppose that either the Licensed Association, which has charge of the Garden show, or the so-called National Association, which handles the Chicago show, will in any way alter their attitude in regard to the newer or so-called independent makers during the motor car exhibitions in this city and Chicago.

"In New York, according to the management, there has never been room enough for members of the Licensed Association to show their cars, so it can be readily seen that there would be no room for the independent makers to exhibit their product even if there was a disposition to take them into the Licensed Association or the new organization which is said to be in process of formation.

"In Chicago the National Association of Automobile Manufacturers, whose show is supposed to be open to both independent and licensed makers, is national and independent in name only. The Licensed Association members get all of the choice spaces in the Coliseum, while the independent makers are sidetracked to the basement or the chilly First Regiment armory, and even then there is not near enough room to take care of those who want to exhibit.

"The question of shows has been and always will be a matter of vital importance to the automobile industry. The facts may be that neither the Licensed Association in New York nor the National Association in Chicago have ever had room enough to provide for all those makers who desired to show, but it is also true that these associations have never shown any desire or disposition to provide for the independent makers, and, what is more, they probably never will.

"For this and other reasons it is an absolute necessity that independent shows be held in both New York and Chicago, and these shows cannot be held unless there is a representative independent organization, like our association, to hold and handle them.

"This show question, however, is only one of a score of vital questions regarding agents, second-hand cars, and other mat-

ters, which of necessity must be handled by an association. For this and other reasons we believe we are entitled to and will receive the hearty support of the automobile industry which is not affiliated with the so-called Licensed Association."

Stearns Opens Branch in New York.

The F. B. Stearns Co., of Cleveland, yesterday opened a branch in New York at Broadway and 57th street. It will be operated by the F. B. Stearns Co. of New York, which has been incorporated for the purpose and will be under the management of W. Arthur Lesser, who is thoroughly familiar with Stearns cars, having been connected with the Stearns agency for several years. Heretofore and for a number of years, the Stearns has been handled in New York by Wyckoff, Church & Partridge, who will take the agency for another car, although they say they will do so at their leisure. Meanwhile the firm has become the United States sales agents for the Commer truck, the British vehicle which will be reproduced in this country by the W. A. Wood Automobile Co., of Kingston, N. Y., which practically is controlled by Wyckoff, Church & Partridge. It will be several months before the Wood factory is able to turn out the trucks, and in the meantime the New York firm will import Commer from abroad. When the Wood plant finally begins to produce them, Wyckoff, Church & Partridge's control probably will be made even plainer.

Klaxon Stops a Quaker Name Juggler.

William P. Young, of Philadelphia, Pa., who operates in that city as the National Supply Co., has discovered that the name Klaxon is one of the trade titles with which it is not safe to take undue freedom. Appreciating its value, Young recently advertised "100 Klaxona horns, value \$35, at \$7.85." As the genuine Klaxon horn lists at \$35, the intent of the ad. was fairly clear, and when the Lovell-McConnell Mfg. Co., which makes the Klaxon, discovered that the so-called Klaxona was merely an ordinary buzzer horn it lost no time in proceeding against Mr. Young. He was sued for infringing the registered trade mark Klaxon and the court has issued an injunction restraining the Philadelphian from endeavoring to trade on it.

Concerning the Two Warner Companies.

Although at the time of its incorporation, in January last, the public prints of Toledo and the Motor World stated that the Warner Motor Co., capitalized at \$10,000, had been formed to take over the Warner Mfg. Co., of that city, T. W. Warner, who is the moving spirit in both companies, writes that no transfer of the sort has been made. He adds that while he will be president and general manager of the Warner Motor Co., when its organization is perfected, at which time its capital will be in-

creased, he is not prepared to make public its plans or purposes other than that it will not produce automobiles. Mr. Warner also makes known that the Warner Mfg. Co., which previously existed as a private concern, has become a corporation with capital of \$500,000 and with himself as president and general manager and owner of practically the entire stock. It has purchased a site on Central avenue, Toledo, on which a modern plant will be erected in the near future.

Merger of New York Taxicab Companies.

The entire assets of the New York Taxicab Co., New York City, have been purchased by the Mason-Seaman Transportation Co. for the sum of \$2,200,000. By this transaction the Mason-Seaman company has gained control of seven-tenths of all the taxicabs running in the city, practically all of the machines being of French make, including 500 Darracqs and 200 Delahaye cabs. The officials of the Mason-Seaman company are: Charles B. Mason, president; S. H. Mason and F. Ducasse, vice-presidents, and William H. Barnard, treasurer. The company has been capitalized at \$5,000,000, but only \$2,800,000 had been issued prior to the acquisition of the taxicab company. The remainder was issued recently to pay for the assets of the absorbed concern.

New Company Takes Gramm's Old Plant.

The Bowling Green Motor Car Co., which has been organized to operate the former Gramm truck factory in Bowling Green, O., which was left vacant when the Gramm company removed to Lima, O., has elected the following officers: President, J. B. Wilson; vice-president and general manager, S. F. Sawyer; secretary, T. J. Miller; treasurer, J. W. Underwood. The company, which is capitalized at \$100,000, will make light delivery wagons, which will be marketed through the Gramm agents, thus indicating a close working agreement between the old company and the new one.

Detroit Truck to be Built in Newark.

The Newark Automobile Mfg. Co. has been organized in the New Jersey city of that name for the manufacture of light delivery wagons and trucks. Temporary offices have been established in the Continental Hotel in Newark, and meanwhile it is seeking a factory site. It already has secured an option on the plot on Frelinghuysen avenue. The vehicle, which will be styled the Newark, originated in Detroit, but only the name of one man engaged in the project has yet been made public, that of C. G. Paul.

To Build Huge Addition to Olds Plant.

Ground is being cleared at Lansing, Mich., for a huge addition to the plant of the Olds Motor Works; it will be a three-story structure, 758 x 74 feet.

WHERE MOTOR CARS WILL BE SOLD

Jeffery Returns from Visit to Northwest and Makes a Prediction—Towns Whose Future Greatness Seems Assured.

"More motor cars will be sold during the next five years over that region bounded by Lake Michigan on the east and stretching from the Canadian border on the north to the Missouri river on the south, than in any other corresponding area in this country," is the prediction made by Charles T. Jeffery, head of the Rambler organization, who recently completed a tour of investigation through the Northwest.

"I met bankers, merchants, manufacturers and farmers by the score," said Mr. Jeffery, "and I never before encountered such general optimism. Business conditions in other sections of this country seem to affect this great region very little, because the prosperity of the Northwest depends upon that one great economic factor—agriculture. Farmers and business men generally seem to favor the Canadian reciprocity idea, and I met quite a number of business men from Canada who were in Minneapolis negotiating for cars to sell across the border.

"The development of the Northwest will be wonderful during the next ten years. Such a town as Great Falls, Mont., which now is scarcely known to people in the Middle West and East, will become a great commercial center of large population, and as a market for modern farm machinery and motor cars for pleasure will be one of the greatest in the country.

"Everywhere the people of the Northwest seem to have what has been called the 'California spirit'; they believe in the country and they believe in themselves. This means business and prosperity."

Creditors Seek to Save Van Dyke.

In an endeavor to relieve its financial stringency and to place it on its feet, several of the larger creditors of the Van Dyke Motor Car Co., of Detroit, practically have assumed charge of its affairs and effected a semi-reorganization, the effect of which will depend largely on the acceptance of a proposed extension which has been submitted for approval to the creditors as a whole.

The creditors who are engaged in the rescue work and who last week were elected directors of the Van Dyke company are: W. W. Wuchter, of the Swinehart Tire and Rubber Co., of Akron, Ohio; Benjamin S. Dean, of Salisbury Wheel and Manufacturing Co., Jamestown, N. Y., and Chas. E. Allinger, of the Chas. A. Strelinger Co., of Detroit. The remaining members of the board being W. L. Davies, of

the Acme White Lead and Color Works, Detroit, Mich., and Wilbur Brotherton, of Jerome B. Rice Seed Co., of Detroit. The officers are: W. L. Davies, president; Wilbur Brotherton, vice-president; Benjamin S. Dean, secretary, and Chas. E. Allinger, treasurer.

The future of the Van Dyke company, which was organized last fall to manufacture a popular priced light delivery wagon, probably will be decided at a meeting of the creditors which will be held in Detroit on Saturday next.

Bosch Coming to See His American Plant.

Robert Bosch, the head of the great magnet industry which bears his name, is due to arrive in this country during the present week. He is coming primarily to look over the new American Bosch factory which just has been completed in Springfield, Mass., and in which the machinery now is being installed. It will begin operations early next month, and Mr. Bosch himself expects to be present when the wheels begin to turn.

Hatfield Goes to Elmira to Enlarge.

The Hatfield Co., which in a small way has been building a two-cycle, air cooled, friction driven delivery wagon at Cornwall, N. Y., has removed to Elmira, N. Y., where a larger plant has been secured. The company, of which Arthur S. Hoyt, a New York starch manufacturer, is president, is capitalized at \$1,000,000. It was organized by and takes its name from C. H. Hatfield, who is managing its affairs.

Parts Makers to Market Own Products.

The Sparks-Withington Co., of Jackson, Mich., manufacturers of pressed metal products, and the Frost Gear & Machine Co., also of Jackson, makers of transmissions and axles, have discontinued their selling arrangements with the American Distributing Co. Hereafter the two companies themselves will market their productions direct from their respective factories.

Corbin Not to Market Speedometers.

Reports that the big Corbin Screw Corporation, of New Britain, Conn., purposed placing a speedometer on the market are authoritatively denied. The reports grew out of the fact that the company is making a speedometer to the order of one W. C. Brown, of New York, whose intentions in connection with the sale of the instrument have not been made plain.

Welborn Becomes Delco's Manager.

Earl Welborn, formerly treasurer of the Dayton Engineering Laboratories Co., of Dayton, O., has been made general manager of the company which produces the Delco ignition system. G. B. McCann has assumed the office of treasurer. G. W. Shroyer remains president and C. F. Kettering vice-president and chief engineer.

CANNOT SELL INFRINGING HORNS

Makers of the Klaxon Again Demonstrate Strength of Their Licensing System—Action Against New York House.

In its vigorous campaign to protect the patent rights and other rights to the Klaxon and Klaxonet horns, the Lovell-McConnell Mfg. Co., of Newark, N. J., has shown how far reaching it is possible for such campaigns to go, when determination exists. Several phases of the law which rarely are employed have been brought to bear, the most recent instance of the sort being contained in a suit filed against the Manhattan Electrical Supply Co., of New York City.

The action charged infringement of the Klaxon patents, Nos. 956,898 and 957,161, which apply to certain arrangements of diaphragm horns with passages for the expulsion of dirt, water, etc., through the walls of the case. The manner in which the Manhattan company infringed these patents was somewhat unusual. It appears that while dealing in the regularly licensed Klaxon horns, it was at the same time selling a horn of the buzzer type which is alleged to infringe the two patents in question. After listening to the presentation of the evidence, Judge Cox, in the United States Circuit Court in New York City, promptly granted a preliminary injunction on the ground that the defendants had no right while dealing in licensed Klaxon horns to sell other horns which infringe the Klaxon patents.

Three More Directors for General Motors.

The board of directors of the General Motors Co. has been increased from 11 to 14 members, two of three new offices being filled by the election of Jacob Wertheim, president of the United Cigar Manufacturers Co., and Edward D. Metcalf, president of the Columbia Rope Co., Auburn, N. Y. The third new director also will be a well known manufacturer. At the meeting last week at which the board thus was enlarged, the regular semi-annual dividend of 3½ per cent. on the preferred stock was declared.

Detroiters in Canadian Reorganization.

The New Dominion Motor Co., capitalized at \$100,000, has been organized to take over and continue the business of Dominion Motors, Ltd., of Walkerville, Ont., which went into voluntary liquidation some three months ago. The officers of the new company are: S. A. Grigg, of Walkerville, president; Enoch Smith, of Detroit, vice-president; Horace Peabody, of Detroit, secretary-treasurer. The other directors are B. J. Fox, of Windsor, Ont., and Charles Culver, of Detroit.



Charles Roeder is building a garage in Coopersburg, Pa.

Redlin & Volkman is the style of a new firm that has been established at Iron Ridge, Wis.

The Matheson Sales Co., of Oakland, Cal., has taken on electrics and will handle the Rauch & Lang line.

A. N. Davidson, of Los Angeles, Cal., is building a one-story brick garage at 634 Wall street. It will cost when complete \$18,000.

J. E. Lambert and J. D. Rowland have formed a partnership and opened a garage in Hagerstown, Md. They are located at 210 South Potomac street.

The Maxwell-Tiffin Co. is the style of a new concern that has started business in Tiffin, Col. Maxwell, Mitchell and Columbia cars are to be handled.

The Black Hawk Auto Repair Shop is the style of a new concern which has been formed in Waterloo, Ia. It will be under the management of A. Jensen.

Having discovered that the crying need of Charles City, Ia., was a modern garage, W. G. Riley has supplied the deficiency. He is now ready for business.

The Brown-Williams Auto Co., of Des Moines, Ia., has filed notice of a change of name to Brown-Corley-Ellis Co. The company is located at 512 Grand avenue.

Falling in line with the rest of Maxwell agencies all over the country, the Maxwell-Briscoe-McLeod Co., of Detroit, Mich., has changed its name to United Motor Detroit Co.

C. R. Loucks has purchased the interest of the late Harry Nederlander in the Nederlander Auto Sales Co., Michigan distributors of Haynes cars, with headquarters at Detroit.

R. B. Tracy, manager of the Michelin Tire Co.'s Chicago house, has opened a branch in St. Louis under the style the Michelin Tire Co. of Missouri. It is located at 4014 Olive street.

The Matthews Garage is the latest addition to the ranks of automobile hostelrys at Bridgeport, Conn. It will be under the management of W. Matthews and Harry Wells, and will specialize in Atlas cars.

Work has commenced upon the Central Garage, which will occupy the plot at 57 West street, Pittsfield, Mass. It will be two stories high, of brick and steel, and will yield 31,000 square feet of floor space.

The Russel-Miller Motor Co., formerly at 706 Sycamore street, Waterloo, Ia., has moved to larger quarters at 213-215 Fifth

street East. The company handles several lines of pleasure cars and commercial trucks.

H. W. King, who formerly operated a garage and automobile livery service at Hawkeye, Ia., has opened a garage at West Union, in the same state. He will sell Rambler, Overland, Regal, E-M-F and Flanders cars.

The Becker Auto Co. has opened a garage and salesroom in Grand Rapids, Mich. It is located at the corner of Island and Sheldon streets and is 150 x 87 feet, of brick, cement and steel, and will house Ford cars.

The Chatfield Brass & Iron Works have inaugurated an automobile department in their plant at Escanaba, Mich., at which repairs of all kinds are to be made. F. Corning, of Detroit, is the manager of the new department.

The Yale Auto Co. has been formed in Minneapolis, Minn., to take over the former garage and shop of the Northwestern Cadillac Co., at 318 Fifth avenue South. Hawkin Olson, formerly with the Cadillac company, will be the manager of the new concern.

M. J. Wolfe, of Brooklyn, N. Y., has opened a garage and salesroom at the corner of Putnam avenue and Ormond place. He will operate as the Kissel Kar Co. of Brooklyn, and, as the name shows, will specialize in Kissel pleasure and commercial cars.

R. B. Crane, formerly manager of the Kansas City branch of the Rock Island Battery Co., has opened salesrooms and a garage at 2651 Monroe street, Toledo, O., under the style The Toledo-Auburn Co. As the name indicates, Auburn cars will be handled.

L. L. Blood, formerly manager of the 21st Street Garage, Toledo, O., has opened salesrooms and a garage in the building formerly occupied by the Speedwell agency, 1006 Madison avenue. He will handle the Hudson, Jackson and Locomobile lines, with R. K. Stout as manager.

L. S. Sponslor and C. D. Miller have formed a company under the style the Buick Motor Sales Co., with headquarters at the corner of Ottawa and Louis street, Grand Rapids, Mich. In addition to regular lines of garaging and selling of cars they will operate a taxicab service.

The Newcomer Motor Car Co. is the style of a new concern which has opened up at Washington street, Fairmont, W. Va. The company handles the E-M-F, Elmore, Correja, Buick and Oldsmobile lines, as well as a line of trucks. It will be under the management of Harry L. Newcomer.

Patrick J. Lolan has been appointed receiver for the Auto Delivery Truck Mfg. Co., 384-386 South Orange avenue, Newark, N. J., following a bill filed by Arthur

V. Blake, an employe who claims salary due and money for material furnished. The company's assets all have been levied upon, while liabilities exceed \$1,000.

The property of Lucian H. McIntire, of Rutland, Vt., has been attached for \$2,000 on account of a suit brought against him by the Rutland Garage Co., of which he formerly was director and manager. It is claimed that McIntire owes the company this amount for supplies furnished for his automobile, during the time he was manager.

William Wagner, formerly a partner in the Jefferson Auto Supply Co., in the Wisconsin city of that name, has gone into business on his own account. He has established a garage and repair shop at Lake Mills, in the same state. Frank Hoefs has purchased Wagner's interest in the Jefferson company and will continue it in his own name.

Kenneth Robinson, son of the president of the Robinson Automobile Co., of St. Joseph, Mo., has purchased a large interest in the Wells-Farmer Auto Co., of the same city, and the latter company henceforth will be known as the S. R. Farmer Co., handling Ford cars. A complete consolidation of the two companies is said to be "in the works."

John F. Plummer, manager of the Locomobile branch, was elected president of the Licensed Automobile Dealers of the City of New York at the annual meeting of that organization which occurred on Monday last, 13th inst. Carl H. Page, the Chalmers agent, was chosen vice-president and Charles P. Skinner, the Mitchell representative, was made secretary-treasurer.

The Mitchell Sales Corporation has been formed in New York City, with James W. Cram as manager and Warren D. Brown, Charles P. Skinner and C. R. Delameter as members, to take over the business of the Mitchell Motor Co. of New York, which at present is handling the sale of Mitchell cars in the metropolis. The new concern, which is a direct factory branch, has leased the main floor of the Pasadena building, at the corner of Broadway and 61st street, and a lot in West 55th street on which to erect a six-story service building. The new branch is to be ready on September 1 next, and will contain about 50,000 feet of floor space.

Recent Losses by Fire.

Philadelphia, Pa.—Priestly & Crosby, 1572 Adams street, garage burned. Loss, \$2,000.

Brooklyn, N. Y.—Empire City Garage Co., 258 Diamond street, building burned; contents saved. Loss, \$500.

Vicksburg, Miss.—Vicksburg Automobile Co., garage and ten cars destroyed. Loss, \$20,000; covered by insurance.



Detroit, Mich.—Little Four Transmission Motor Co., under Michigan laws, with \$15,000 capital.

Detroit, Mich.—Gilmore - Cragg Motor Mfg. Co., under Michigan laws, with \$5,000 capital; to manufacture gasoline motors and automobiles.

Detroit, Mich.—Abbott-Detroit Motor Sales Co., under Michigan laws, with \$10,000 capital. Corporators—F. D. Craig, F. R. Poss, R. R. McKinley.

Boston, Mass.—Armory Garage, Inc., under Massachusetts laws, with \$5,000 capital; to deal in automobiles. Corporators—John Beck, Robert S. Barlow.

Louisville, Ky.—Dunham Automobile Co., under Kentucky laws, with \$2,500 capital; to deal in automobiles. Corporators—George A. Dunham, W. N. Morrill, J. E. Kent.

St. Louis, Mo.—Kardell Motor Car Co., under Missouri laws, with \$15,000 capital; to deal in automobiles. Corporators—H. W. Kardell, John C. Kardell, B. F. Bridgewater.

Milwaukee, Wis.—Rohde Automobile Co., under Wisconsin laws, with \$25,000 capital; to deal in automobiles. Corporators—Sidney Knowlton, Albert Rhode, John J. Rhode.

Indianapolis, Ind.—The Studebaker Corporation, a corporation of New Jersey, with a capital stock of \$45,000,000, admitted to do business in the state of Indiana, with \$13,775,000.

Louisville, Ky.—Louisville Auto Co., under Kentucky laws, with \$50,000 capital; to manufacture and deal in automobiles. Corporators—J. G. Wathen, J. A. Serpell, O. H. Wathen.

Boonville, Ind.—Boonville Auto Co., under Indiana laws, with \$10,000 capital; to deal in motor vehicles. Corporators—Andy Franz, John W. Winsett, Cora Franz and Bertha Winsett.

St. Louis, Mo.—Igou Motor Car Co., under Missouri laws, with \$6,000 capital; to maintain a garage and deal in automobiles. Corporators—Samuel C. Igou, R. C. Hoffer, H. W. Tetchmeyer.

Indianapolis, Ind.—Hydraulic Drive Co., under Indiana laws, with \$50,000 capital; to manufacture transmission devices. Corporators—F. H. Cheyne, C. S. Walker, Thomas H. Endicott.

Kansas City, Mo.—No-Air Tire Co., under Missouri laws, with \$2,000 capital; to manufacture patented automobile tires. Corporators—Ray E. Wolfe, O. J. Chapman, William Wolfe.

Columbus, Ohio—Buckeye Auto Co., under Ohio laws, with \$1,000 capital; to deal in automobiles. Corporators—M. K. Snyder, Jay H. Hunt, L. J. O'Donnell, E. N. McCall, G. J. Moutane.

Birmingham, Ala.—Great Southern Motors Co., under Alabama laws, with \$2,000; to deal in automobiles and parts. Corporators—E. F. Enslen, E. V. Smith, John J. Kyser, E. F. Enslen, Jr.

Indianapolis, Ind.—Roth-Murphy Engine Starter Co., under Indiana laws, with \$50,000 capital; to manufacture an engine starter. Corporators—G. W. Roth, W. H. Murphy, David R. Murray.

St. Louis, Mo.—Motor Service Co. of St. Louis, under Missouri laws, with \$15,000 capital, one-half of which has been paid in. Corporators—J. H. Butler, Otto F. Karbe, Thomas Millivix, M. E. Donnelly.

Chicago, Ill.—Terry Garage & Supply Co., under Illinois laws, with \$5,000 capital; to deal in automobiles and maintain a garage. Corporators—Schuyler W. Terry, Harry W. Terry, George C. Terry.

Boston, Mass.—Henry Motor Car Sales Co., under Massachusetts laws, with \$20,000 capital; to deal in motor vehicles. Corporators—Charles S. MacKeranin, James H. Alexander, George M. Faulkner.

Richmond, Ky.—Citizens Motor Car Co., under Kentucky laws, with \$1,000 capital; to manufacture and deal in automobiles and motor vehicles. Corporators—W. C. Bennett, Fletcher West, J. H. Dean.

Minneapolis, Minn.—R. W. Munyer & Sons Co., under Minnesota laws, with \$50,000 capital; to deal in automobiles and other motor vehicles. Corporators—R. W. Munyer, C. I. Munyer, W. W. Munyer.

Cleveland, Ohio—Fal - Empire Motor Sales Co., under Ohio laws, with \$10,000 capital; to deal in automobiles. Corporators—Don P. Miller, M. R. Godfrey, W. M. Spear, George Schindler, M. Marquard.

Boston, Mass.—Butler Motor Truck Co. of New England, under Massachusetts laws, with \$50,000 capital; to manufacture and deal in commercial motor vehicles. Corporators—LeBurton Butler, E. M. Butler.

Newark, N. J.—Newark Automobile Co., under New Jersey laws, with \$500,000 capital, of which \$1,000 has been paid in. Corporators—Arthur F. Egner, William E. Brown, Jr., Conover English, all of Newark.

Cleveland, Ohio—Peerless Auto Livery Co., under Ohio laws, with \$10,000 capital; to conduct a garage and automobile livery. Corporators—Charles M. Cachat, J. A. Cachat, F. A. Poole, E. C. Mullen, John D. Fackler.

Binghamton, N. Y.—Hess, Lowell & Hammond Co., under New York laws, with \$5,000 capital; to deal in automobiles. Corporators—C. Fred Hess, Mason Lowell,

Frederick F. Hammond, all of Binghamton, N. Y.

Bath, Me.—Carpenter Garage & Motor Co., under Maine laws, with \$50,000 capital; to manufacture and deal in automobiles, motor vehicles, airships, motor boats and accessories. Corporators—J. H. Rogers and others.

Platteville, Wis.—Acme Auto & Garage Co., under Wisconsin laws, with \$10,000 capital; to deal in automobiles and other motor vehicles, and maintain a garage. Corporators—John Kettler, Warren L. T. Orne, F. T. Goodell.

Pittsburg, Pa.—General Automobile Co., under Pennsylvania laws, with \$10,000 capital; to manufacture and deal in automobiles and other vehicles. Corporators—Harry Silverman, Aaron De Roy, E. A. Barchfield, all of Pittsburg.

New York City, N. Y.—Pedersen Lubricator Co., under New York laws, with \$25,000 capital; to manufacture automobiles and other motor vehicles. Corporators—A. P. Stumpf, Harrison; S. H. Grossman, Newark; F. Stumpf, Arlington, N. J.

Ansonia, O.—Darke County Automobile Co., under Ohio laws, with \$20,000 capital; to maintain a garage and deal in automobiles and motor trucks. Corporators—Stanley F. Stayer, John B. Wilson, Fred C. Moore, F. Lee Rouse, Thomas J. Miller.

Jersey City, N. J.—Ideal Electric Vehicle Co., under New Jersey laws, with \$250,000 capital; to manufacture and deal in automobiles, mechanical and electrical appliances, devices. Corporators—H. A. Tufel, R. G. Chase, C. A. Elliott, all of Jersey City.

New York City, N. Y.—The F. B. Stearns Co. of New York, under New York laws, with \$25,000 capital; to manufacture, repair and deal in motors, engines, etc. Corporators—V. H. Smith, W. L. MacGready, of Brooklyn; W. A. Lesser, New York City.

St. Louis, Mo.—Missouri Automobile Association, under Missouri laws, with \$2,000 capital; to promote, conduct and hold automobile contests. Corporators—F. W. Payne, O. H. Cook, Charles P. Luhn, W. Ashley Gray, H. W. Harrington, Joseph A. Schlecht.

New York City, N. Y.—United Auto Supply Co., under New York laws, with \$10,000 capital; to manufacture and deal in automobile supplies and accessories. Corporators—George E. La Vietes, Miriam La Vietes, of 540 West 163d street, New York City; Jacob J. Lazaroe, 132 Nassau street, New York City.

Increases of Capital.

Findlay, Ohio—Findlay Motor Co., from \$300,000 to \$400,000.

Decatur, Ind.—Decatur Motor Car Co., from \$150,000 to \$325,000.

"Less Haste—More Speed"

Proven True of Inter-State Policy

A dependable watch is not hurried in the making.

It takes time to cut out a great diamond.

If a motor car is shot through the factory, its parts hurriedly turned out and assembled into what acts like a real automobile for only a few months, the buyer of that car naturally regrets his choice. He is liable to look upon all pleasure cars as luxuries.

It was a mighty expensive luxury to some hundreds of thousands who went motor-mad and now repent their ownership of an "assembled" or a "we-turn-out-so-many-hundred-a-day" cars.

Too many cars were "turned out" into the world to fill that great unhealthy demand. The enemy of the automobile today is the man who blindly plucked the "citrus car," the unripe variety of automobile.

The slogan "Less haste, more speed" nailed to every wall of our factory for three years, has held our output down to where it belongs. The first cars we built were weeks in the factory. We have been slow and orders-behind ever since. But we won't hurry so fast that the tiniest bit of construction is slighted.

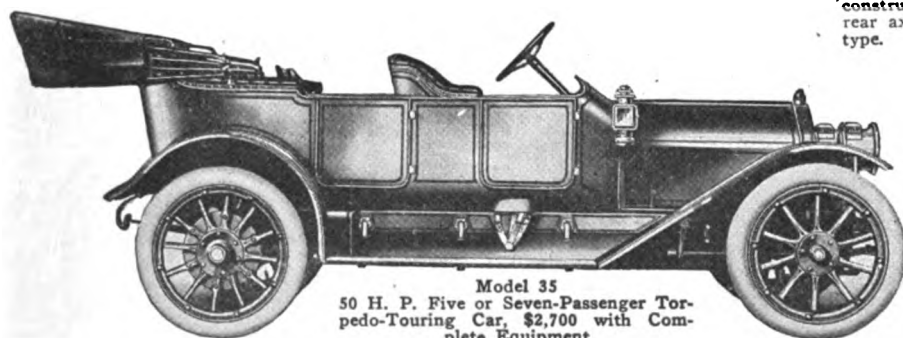
Therefore, "more speed" towards nation-wide popularity. Now we have a larger factory and we build more cars—but no faster than ever.

And our "high quality-sane-price" idea is simply meeting magnificent applause. We have demonstrated that it can be done—the building of a perfect and long-life car at a reasonable cost.

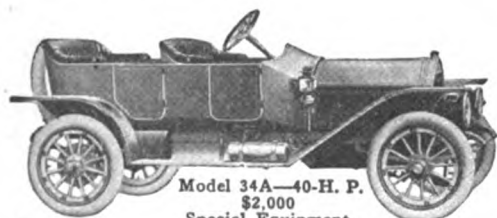
New catalog tells more and is free to all interested.

Use Reminder below.

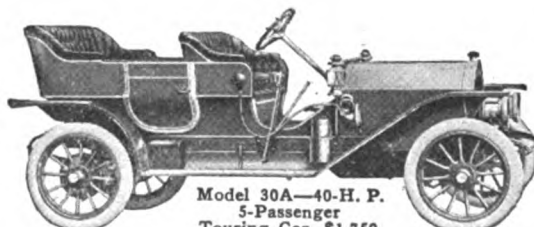
Inter-State



Model 35
50 H. P. Five or Seven-Passenger Torpedo-Touring Car, \$2,700 with Complete Equipment



Model 34A—40-H. P.
\$2,000
Special Equipment



Model 30A—40-H. P.
5-Passenger
Touring Car, \$1,750

(103)

SPECIFICATIONS

Inter-State "40" 1911 Models

The motor for our 6 "40" models is rated at 40 h. p. Average speed of 1,500 revolutions a minute. Bore, 4½ inches. Stroke, 5 inches. L-head type. Valves all on one side of large diameter, nickel steel heads, carefully ground stems. Push rods with rollers of large diameter, providing rolling contact on cam shaft. Valve adjusting screws with fibre cushion heads, insuring silent valve action. Crankshaft special carbon steel, drop forged and double heat treated. Mounted in three bearings of large dimensions lined with die cast white brass of best quality and lubricated by force feed gear pump. Constant level splash oiling system, insuring accurate oiling at all times. Oil reservoir two gallons capacity. Sight feed in easily discernible position on dash, showing amount of oil flowing to bearings at all times.

Clutch and transmission housed in integral oil tight case, separated by retaining wall allowing use of special oils for each unit. Clutch of improved cork insert design, operating in oil. Eight cork insert discs enclosed between nine steel discs, providing contact of cork on steel. Throwout fork and collar provided with ball thrust, assuring long life. This construction provides a wonderfully smooth-acting clutch of long wearing qualities and gradual, easy, positive engagement. Gearset of selective type with three forward speeds and one reverse. Extra heavy pitch gears of chrome-vanadium steel, running in oil. All clutch and transmission bearings are imported annular ball type.

50 Horsepower Torpedo-Touring Car

Five or Seven-Passenger, \$2,700; Full Equipment

This new and larger model incorporates the best features of the Inter-State "40." With a number of advanced points of construction, never before offered in any but the highest-priced machines. T-head type motor with separate inlet and exhaust cam-shafts. Suspended at three points, precluding any possibility of frame stresses being transmitted to the motor. Crankshaft supported by three bearings of especially liberal dimensions. Conservative rating of 50 h. p. at 1,500 revolutions per minute. Valves 2¼ inches in diameter, nickel steel heads with carefully and accurately ground stems. Separable valve guides. Extra large frictionless, roller push rods with fibre-cushion adjusting screws. All rollers and cam-shafts case-hardened and ground to exact dimensions. Camshaft and pumpshaft bearings eccentric, allowing very accurate adjustment of reduction gears. This feature with double gear on crank-shaft assures noiseless operation.

Special lubricating system with improved distributing pump assures positive delivery to the three main bearings. Oil overflow from bearings is retained in pockets in the false bottom of the oil-pan, allowing splash spoons on connecting rods to dip slightly. Sight feed located on dash, readily discernible showing amount of oil supplied to bearings at all times.

Mechanically operated cooling system actuated by centrifugal pump. Extra large water manifolds and piping. Radiator, cellular construction and of ample capacity to insure cooling of motor at all times. Two complete ignition systems comprising dry batteries and four-unit coil and a specially imported high-tension magneto. Each system is provided with separate set of spark plugs.

Front axle of double-forged I-beam section, carefully heat-treated. Steering knuckle provided with ball thrust bearings to facilitate turning and mounted on extra large hardened bolts.

Rear axle specially designed for Inter-State cars. Full floating type, completely provided with adjustments for accurately determining position of driving gears. Pinion shaft, pinion gear and differential mounted on single steel casting, insuring permanent alignment. Special torsion tube construction eliminates the use of torsion bars or distance rods. All wheel, rear axle and driving-shaft bearings of extra large imported annular ball type.

Brakes located on rear axle of internal expanding design. Service or foot actuated brake operating on drum 16 inches in diameter. Emergency brake operating on 12-inch drum. All brake bands with 2¼-inch face, fully protected from dust and dirt.

Pressed steel frame narrowed in front and raised in the rear to allow full action of rear springs. Front springs semi-elliptic type, 40 inches long. Rear springs ¾ elliptic, 48 inches long. All springs 2¼ inches wide, of special vanadium steel. All spring bolts provided with grease cups.

Tires, 36 by 4½ inches with demountable rims. Wheel-base, 124 inches. Tread, 56 inches. Full equipment.

Inter-State Automobile Co.
MUNCIE, IND.

A Reminder

Inter-State Automobile Co. (M. W. 316)
Muncie, Indiana

Send me your Free Catalog.

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"When it expired, I meant to discontinue my subscription for the Motor World, but as each succeeding issue put in a prompt appearance, it became too much like parting with an old friend, so here are the \$2 to continue it."—P. D. Young, Spokane, Wash.

Upset of the Horsepower Formula.

One of the best evidences of the rapid advance of automobile engineering practice is the present status of the A. L. A. M. rating formula, which, though still adhered to, is almost obsolete. At the time of its adoption it was predicated on what then appeared to be the only fixed quantity in the horsepower equation, namely the piston speed. While by no means a constant, it was supposed that the restrictions of good practice would hold it pretty close to a thousand feet per minute for some time to come. It also was assumed that mean effective pressures would not be increased materially. The nominal horsepower was held to be dependent entirely on the bore.

That was in the day of the "square" motor, and at the time of its adoption some three or four years ago the formula was highly satisfactory. The trend toward the long-stroke motor, which is more in evidence this year than ever before, however, has completely vitiated the formula. Unfortunately, too, this has come at a time when its adoption is becoming almost universal, so that the spectacle is presented of an expression which is in general use but which does not convey the meaning it is intended to convey. The situation is almost as bad as that which the formula itself originally was designed to correct. Double ratings, as expressing the brake horsepower of the motor and its maximum theoretical output, no longer exist, although in a few instances double ratings are imposed for one reason or another. What does happen, however, is that the salesman quotes the A. L. A. M. horsepower and then the "brake horsepower"—which latter may be a more or less reliable figure according to circumstances.

In the case of the long stroke engine the discrepancy is considerable, so much so in fact that cautious manufacturers sometimes hesitate to allow it to be used. Thus one builder of wide repute introduces his new model and fails to quote its cylinder dimensions for the simple reason that its bore would place it in the same class with engines of much smaller actual power. An engine builder whose product is used by a number of assemblers has adopted the same plan, while in several other cases cars are listed as having engines of given dimensions but with no stated horsepower. To cite a couple of extreme instances, one well-known engine of 4 x 6 inch dimensions is rated at 35 horsepower, whereas the formula would allow it but 25.6; another engine, which has the extreme dimensions of 3 3/16 x 5 1/8, also is listed at 35 horsepower, while the formula would cut it down to 16.3.

The fact of the matter is that the standards of design in the industry are being changed and that the old method of estimating power on an average basis has been thrown out by the destruction of the old average. Yet the man who buys a car still wants to know its power, even though the knowledge can be of no conceivable value to him—unless it be to quote to his friends to whom it means less. Where actual comparison is necessary, as in racing, the convention has been adopted of classi-

fying engines by piston displacement, which represents, if you please, not power but capacity to produce power. Yet even displacement fails to account for the piston speed and so includes a very broad assumption when used as a basis of rating. Even so, it forms as good a method of comparison as any in use today. For it must be understood that many engineers despair of ever reaching an agreement on any really practical and trustworthy formula that shall express real horsepower in simple terms.

The Drivers for Commercial Vehicles.

What the chauffeur problem has been to the motorist in the past is not a circumstance to what the average man believes it is going to be in the future of the commercial vehicle. Visions of the elevation of the teamster to one of the higher orders of professionalism, expectations of wage and labor entanglements and the blossoming of new flowers of ethics in respect to the intermingling of loading and driving accomplishments are among some of the lively apprehensions that are entertained. It is feared, in a word, that much the same sort of situation will result when the present day wagon driver is taught to drive a motor truck that occurred a few years ago when the young and aspiring machinist came out of the shop and fell for the varied allurements of "chaffering."

It is, therefore, somewhat comforting to receive the assurances of men who have confronted the question in the shrewd way in which business men regard their own affairs that, if properly handled, the driver problem is not destined to prove so very troublesome after all. Two important forces are at work even now smoothing the way. One is the natural ambition of commercial vehicle builders to enhance the value of their products by rendering them as simple to operate as is consistent with good economy, and the other is the gravitational tendency of all business to follow the lines of least resistance. The effect of the latter is to cause the business man in adopting motor trucks to seek to adapt his present force of teamsters to the new condition.

The point is that the man who has been trucking for one concern for a number of years, outside of his ability to handle his team, has acquired certain valuable experience and knowledge of his employer's business which is not lightly to be set

aside. He is familiar with the goods he hauls, their handling, the routes he must cover, the wants and peculiarities of customers or other business concerns. He has acquired also what may be designated vaguely as the temperament of a certain line of business. Teaming is his nominal work, but in certain lines it is only a small part of it; the remainder may consist of order taking, delivering, bookkeeping in a small way, collecting and even unpacking and installing wares or appliances of one sort or another. The teamster is a unit in a business organization, and to attempt to displace him merely because the utensil through which his work has been employed has been replaced with a more efficient one, generally speaking, would be an unwise proceeding.

General appreciation of this fact may be considered as throwing an added burden of responsibility on the automobile manufacturer who thereby is forced to study simplicity of control in his product quite as closely as questions of operating economy, but it helps to clear the situation as far as the labor problem is concerned most amazingly. Experience has shown that operatives whose work is lightened by the introduction of new apparatus are not prone to discontent once they have been properly educated to the new conditions and once they have learned that its use increases their own earning powers. And, generally speaking, the employer who is able to get along peaceably with his employes under ordinary circumstances should find no insurmountable obstacle in his chauffeur problem.

Modernizing the Fire Engine.

While the New York Fire Department has acquitted itself creditably in respect to the adoption of motor-propelled hose and patrol wagons as well as in supplying light passenger cars for the service of various chiefs and heads of sub-departments, it is remarkable that it should only just have got around to the testing of its first automobile pumping engine. And that that machine should be of composite pattern, involving the use of two distinct classes of machinery is not the least remarkable feature of the situation.

The automobile is performing no more widely beneficial service than in fire duty. One great need of all equipments is rapid response to alarms, and this, of course, the automobile ensures above all things.

Whatever economies it brings about are even more advantageous than those which it works in purely commercial service, since they help to reduce a great public burden, but the saving of expense is wholly secondary to the increased safety of public property.

But while the advantages of motor equipment are manifold and patent, its introduction is a matter involving considerable difficulties to those in charge of municipal and departmental affairs. The initial investment is high, sufficient funds frequently are lacking and special appropriations difficult to obtain. If, under the circumstances, it is deemed expedient to effect a combination of old and new equipment by the replacement of horse gear with motor tractors it is not surprising. At the same time great care should be exercised not to attain complicated and inefficient results that will defeat their own object. The linking of a gasoline power plant for propulsion and a steam plant for pumping, which hardly seems justifiable on any other basis than that of supposed economy, and therefore is to be viewed askance. Apart from the circumstance that it entails needless complication, it requires the transportation of an excessive amount of weight, both in superfluous machinery and in fuel. Using two kinds of machinery and two kinds of fuel where one would serve does not fit in with modern ideas of economy and expediency.

In most courts of law a first offense mitigates the penalty, but each succeeding lapse subjects the culprit to increased and increasing severity. In the American Automobile Association, however, it appears that the first offense is considered the worst offense—the justice that is tempered with mercy being meted out for second and subsequent offenses—which startling reversal of judicial procedure reflects no great credit on the organization and is not likely to increase general respect for its regulations. Adding but three months for such repeated offense to the original punishment of the chronic offenders comprising the Oldfield "bunch" is not calculated to inspire much fear in the hearts of others who may be inclined to flout A. A. A. authority. When such men show that they do not care for mercy they should be given none. The A. A. A. should provide itself with something stronger than rosewater for use on such occasions.

COMING EVENTS

March 14-18, Denver, Col.—Annual Show in Denver auditorium.

March 14-18, Syracuse, N. Y.—Syracuse Automobile Dealers' Association's second annual show in State Armory.

March 15-18, Louisville, Ky.—Louisville Automobile Dealers' Association's annual show in First Regiment Armory.

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

March 18-25, Montreal, Canada—Automobile and Aero Club of Canada's show in Drill Hall.

March 20-25, Youngstown, O.—Youngstown Automobile Club's show in Auditorium rink.

March 20-25, Wilkes-Barre, Pa.—Wilkes-Barre Automobile Club's show.

March 20-26, Quincy, Mo.—Show at Highland Park.

March 22-25, Watertown, N. Y.—Watertown Dealers and Manufacturers' Association's second annual show in armory.

March 22-23, Muskogee, Okla.—Show in Convention Hall.

March 25-April 8, Pittsburg, Pa.—Pittsburg Automobile Dealers' Association's fifth annual show in Duquesne Garden.

March 27-30, Jacksonville, Fla.—Racemeet on Atlantic-Pablo Beach.

March 31-April 8, London, England—Commercial vehicle exhibition at Olympia.

April 1-8, Montreal, Can.—Annual show in Coliseum.

April 8-9, Los Angeles, Cal.—Twenty-four hours race on Los Angeles motor-drome.

April 15, New York City—Motor Truck Club's commercial vehicle parade.

April 22, Redlands, Cal.—Annual hill climb from Redlands to Oak Glen.

April 29, Philadelphia, Pa.—Quaker City Automobile Club's roadability contest.

May 30, Indianapolis, Ind.—Five hundred miles international sweepstakes race on the Speedway.

June 22, Chicago, Ill.—Chicago Motor Club's annual hill climbing contests on Algonquin Hill.

July 2, Le Mans, France—International road race for the French Grand Prix.

July 19-29, Chicago, Ill.—Chicago Motor Club's motor truck run from Chicago to New York.

August 25-26, Elgin, Ill.—Chicago Motor Club's national stock chassis road races.

September 9, Bologna, Italy—International road race for the Italian Grand Prix over the Bologna circuit.

TEN IN FIVE DAYS TEST IN TEXAS

Four Fail to Finish and No Survivor Obtains Perfect Score—DeWitt and Carroll Win the Trophies.

Of the ten contenders who participated in the Bering Reliability Tour, which started from Houston on the 6th inst. and finished in that Texas city on Friday, the 10th, none obtained a perfect score. George DeWitt, driving the Cadillac pacemaker, came the nearest to doing so. He finished with a perfect road score, but the technical examination cost him 75 points. The loss, however, was not enough to prevent him from taking the chief prize, the cup offered by the Bering Tire & Rubber Co., as his was the lowest score in the touring car class. F. Lee Carroll, who piloted a Marion runabout, made the best net score. He lost one point on the road and but 43 on the technical examination, leaving him 956 points and earning for him the cup for the runabout class.

Bad roads caused most of the trouble for the contestants. There were many miles where the sand was so deep that wheels sank nearly to their hubs. The total distance, approximately, was 800 miles.

Before the start the cars were parked over night on Main street, enclosed within a wire fence, and watched by four special policemen, detailed by the mayor, so that no one could touch the cars after 10 o'clock Sunday morning, the time set by Referee Carr for all machines to be checked in. The start was made Monday at 8:45 a. m. with George DeWitt, driving the Cadillac pacemaker; J. F. Minton, Jr., at the wheel of the Regal pilot car having left nearly an hour previous. The cars left at one minute intervals thereafter.

The first day's run was to Giddings, and it was during this stage of the affair that most of the contestants suffered their penalties. The pilot car—which, however, was not a contestant—suffered as much as any of the others. It lost its way and later suffered a broken front spring, causing it to fall behind the pacemaker. It was during this part of the run, also, that the first accident occurred. It happened shortly after the start, when Clinton Coolgrove, driving a non-contesting Overland, ran into a ditch, causing the car to turn turtle. Coolgrove was not injured, but C. W. McPherson, who was the only other person in the car, was not so fortunate and sustained five broken ribs, with internal injuries.

The run from Giddings to San Antonio, the second of the journey, was made without startling happenings. Several cars were stalled in the sand and added several more debits to their score sheets before they managed to get free. To cheer up those taking part in the tour, a ball was

given in San Antonio at the end of the second day's run.

The run to Corpus Christi, the third instalment of the contest, was no easier than the two previous days. Three cars were not reported until midnight, and it was necessary for F. Lee Carroll, at the wheel of the Marion, to bring the flag of the pacemaker into the night control, on account of tire trouble by the Cadillac.

Six cars were left in the running on the fourth day, the other four having retired principally on account of tire troubles. Victoria was the destination, and the trip was trying enough to eliminate the Maxwell, Pullman and Chalmers.

The last leg of the five days' trip was made over fairly good roads, and each driver was anxious to be the first to enter the city. This was not allowed, however, as no one was permitted to pass the pacemaker. DeWitt had the honor of being the first to enter Houston. After him the others cars straggled in, and were parked in the Auditorium for technical examination, which made the final standing as follows:

	Road Score	Tech. Exam.	Total
G. DeWitt, Cadillac...	0	75	925
F. L. Carroll, Marion..	1	43	956
Geo. Ayers, Brush....	43	231	726
F. H. Kerr, Buick.....	83	170	747
Albert Skinner, Ford..	16	34	950
Wm. Guillaume, Reo...1000	Waived Exam.		

Those who failed to finish were: Kenneth Way (Maxwell), Walter Lane (Pullman), L. J. Stubenrauch (Chalmers) and A. C. Burton (Hudson).

No Stamp Needed on Acetylene Tanks.

Although the United States Department of Commerce and Labor as late as November last ruled that acetylene gas tanks could not be carried on passenger steamers, unless such tanks were stamped with the official government stamp certifying them to be of "not less than 55,000 pounds tensile strength to square inch and of sufficient thickness of steel to withstand pressure of 1,200 pounds per square inch," it has now modified its ruling considerably, demanding only that these tanks be of the strength indicated and charged according to the ruling made March 7, 1903, but dropping the requirement as to the official government stamp. No change, however, has been made in the requirements as to the charging, which must not exceed a working pressure of 240 pounds per square inch, while the tanks must be completely filled with asbestos disks, the porosity of which shall not exceed 80 per cent.

Having made "proper application and representations," E. J. Allen, of Richmond, Va., the Coburn Motor Car Co. and its drivers, Bryant, of Norfolk, Va., and W. Gray, of Los Angeles, Cal., have been reinstated by the A. A. A. They had been suspended on December 21st last.

ROSEWATER FOR OLDFIELD MESS

A. A. A. Sprinkles it with Benevolent Hand—Second Offenders Escape with Slight Punishment—One Track Restored.

Terrifying punishment again has been visited on Barney Oldfield. Having been suspended for one year for a previous offense, Oldfield went right on defying and scoffing at the A. A. A. and as a result the contest board last week grew really stern and tacked on two instalments of three months each for two succeeding offenses, one at Los Angeles, the other at San Antonio. Ben Kirscher, who similarly offended, was given the same homeopathic dose. George H. Clark, who previously drew a two years sentence, also received an additional three months and will be shelved until April 1, 1913. W. H. Carlson, Jr., E. H. Bechtel and H. Buckley, of Los Angeles, other competitors who offended a second time, likewise were "sent up" for three months more, and in theory at least will remain idle until April 1, 1912, as will the officials who served at Oldfield's second "Outlaw" meet in Los Angeles, viz.: C. F. Stamps, Jr., Louis Arms, L. R. Mellus and J. Alex. Sloan.

James B. Ryall and Arthur Oakerman, who had not previously sinned, were suspended for one year from January 1st last, and the officials who also helped out Oldfield on the same occasion were given the same punishment. They are E. R. Maier, Frank Chance, Aubrey Austin, Bert, Smith, J. Watlington, W. H. Lewis and Chester Lawrence. The Ascot Park track in Los Angeles, previously banned until January 1, 1912, had its disqualification lengthened three months, and the International Fair Grounds track at San Antonio, Tex., which Oldfield and his barnstormers used, was placed on the "in bad" list for the fearfully long period of three months, or until May 26 next. But that the Texans have no real cause for worry was made plain at the same A. A. A. board meeting, when the State Fair Grounds track at Shreveport, La., which committed the same offense, was "whitewashed" and restored to good standing.

Glidden "News" that is Chiefly Dreams.

Someone in Washington, D. C., discovered late last week that the Glidden tour, which would be styled the "Reciprocity tour," would start from that city on June 15th next and end in Ottawa. Can. The glad "news" was put on the wire and telegraphed to newspapers in all parts of the country. As a matter of fact, however, the tour is still very much "up in the air," no dates or route or destination having been fixed. Chairman Butler, of the A. A. A. contest board, says so and he surely knows.

DENVER SHOW FILLS AUDITORIUM

Seventy-Eight Exhibitors Serve to Make a Big Display—Light and Color Scheme Contribute Cheerfulness.

Denver, which is a mile high up in the world, opened its annual show in the Auditorium on the 14th inst., where it will continue for the remainder of the week. Regardless of the altitude, the promoters consider it a tip-top show. There are no less than 78 exhibitors, of whom 31 display pleasure vehicles and 14 exhibit trucks. Accessories are shown by 26 dealers, while seven stage motorcycles.

Red and white constitute the color scheme of the decorations, and of course an abundance of electric light adds cheerfulness to the affair.

The exhibitors are as follows:

Pleasure cars: Tom Botterill, Pierce-Arrow, Pope-Hartford, Columbus electric; Mathewson Auto Co., Locomobile, Oldsmobile, Oakland, Ohio electric, Thomas, Reo; McDuffee Motor Car Co., Chalmers; E. R. Cumbe, Rambler; Fernald Auto Co., Maxwell, Columbia; Western Marion Co., Marion; Krebs-Covington, Hupmobile, Detroit electric, Lozier; W. W. Barnett, Stoddard-Dayton, Alco; Felker Auto Co., Stevens-Duryea, Waverley electric, Hudson; John Deere Plow Co., Velie; Colorado Auto Co., Cadillac; Colorado Motor Sales Co., Marmon, Peerless; MacFarland Auto Co., Buick, Packard; Havens Motor Car Co., Dorris; Charles Bilz, Franklin; Metzger Motor Co., Everitt; Overland Auto Co., Winton, Overland, Apperson, Baker electric; J. I. Case Threshing Co., Case; Ford Auto Co., Ford; F. A. Trinkle Auto Co., Brush, Alden Sampson; Hinkley Investment Co., White; Terrace, Fritchle electric; Stanley Motor Car Co., Stanley steamer; Denver Regal Auto Co., Regal, Bergdoll; Elmore Auto Co., Elmore; Colburn Auto Co., Colburn, Renault; Colorado Interstate Co., Inter-State; Kissel Motor Car Co., Kissel; Wilson Auto Co., Mitchell, Firestone-Columbus, Empire; Swanbrough & Co., Hupp-Yeats electric; Timppte Bros., Moon; International Harvester Co., I. H. C.

Commercial vehicles: W. W. Barnett, Stoddard-Dayton; Charles Bilz, Franklin; Vulcan Power Wagon Co., Grabowsky; Trinkle Automobile Co., Brush; International Harvester Co., I. H. C.; Denver Rapid Car Co., Rapid; Van Dyke Motor Car Co., Van Dyke; Timppte Brothers, Chase and Gramm; Stephenson Truck Co., Alden Sampson; Mathewson Auto Co., Reo; Fritchle Auto Co., Fritchle electric; Kissel Motor Car Co., Kissel; Seitz Detroit, Seitz; Havens Motor Car Co., Kelly; MacFarland Auto Co., Packard.

Accessories: Denver Rock Drill & Machinery Co., Jackson & Wood, Continental

Oil Co., Colorado U. S. Refining Co., L. V. H. Tire Co., Havens Motor Car Co., Chief Battery Co., Carstarphen Electric Co., Keystone Lubricating Co., Brackett Welding Co., Duplex multi spark plug, W. W. Standard, Boss Rubber Co., Fry & McGill, Auto Equipment Co., Denver Auto Goods Co., Great Western Oil Co., Colorado Tire & Leather Co., Nock & Garside, Cahn Electric Co., Denver Auto School; Independent Oil Co., Howe & Johnson, Pratt Brothers, Denver Omnibus & Cab Co.

Motorcycles: Fry & McGill, Indian; Walter W. Whiting, Harley-Davidson; Mead Autocycle Co., Excelsior; New Era Motorcycle Co., New Era; G. A. Gordon, Emblem.

Lots of Music at Syracuse's Show.

Although automobile shows usually are considered incomplete without the accompaniment of inspiring music, few, if any, such functions are on a par with the Syracuse (N. Y.) show, which boasts two separate bands. The affair is the second annual show of the Syracuse Automobile Dealers' Association, and was opened on the 14th inst. for a four days' run in the State Armory. Mayor Schoenck was the dignitary who presided at the inauguration, and, pressing the button usually provided for such purposes, switched on the myriads of lights and made the opening speech formally declaring the exhibition officially in readiness. For the decorative scheme the management chose gold and white and so skilfully have the draperies been arranged that not an inch of the bare walls and ceiling of the big structure is visible. Of the 54 exhibitors who occupy space 28 display complete cars and 26 show accessories. The list of exhibitors follows:

Automobiles: C. Arthur Benjamin, Central City Motor Car Co., Clinton Auto Co., F. L. Durbin, Franklin Auto Co., Genesee Motor Car Co., James Auto Co., Kane & Roach, Kess-Doane Co., King Smith Co., H. A. Moyer, Overland-Syracuse Co., Syracuse Motor Car Co., Strait & Shaw, United Motors Syracuse Co., John H. Valentine Co., Willis Motor Car Co., T. A. Young, Case Threshing Machine Co., Ross L. King, F. A. Marshall, Syracuse McIntyre Co., Syracuse Regal Co., Arthur Virginia, J. L. Youman, Quiride Co., F. L. Nevin and Miller & Cook.

Accessories: American Multigraph Sales Co., American Vulcanizing Works, Aubeuf Co., C. Arthur Benjamin, Chase Motor Car Co., Dyneto Electric Co., Franklin Auto Co., Jones & Pimm, Kerr-Doane Co., A. H. MacGraw, Meyers Bros., H. R. Olmsted & Son, Potter Co., J. D. Quinlan, F. L. Reed, Sanford-Herbert Co., J. A. Seitz, Standard Oil Co., Syracuse Rubber Co., United Motor Syracuse Co., Tiffany Sales Co., A. G. Williams, Willis Motor Car Co., E. Q. Williams, Indian Refining Co., Broga Automatic Fastener Co., John W. Frey and W. P. Hitchcock.

'FRISCO'S HALF-PORTION SHOW

Despite Opposition of Trade Body, 26 Dealers Appear at Club's Project—Japanese Lanterns Chief Decoration.

Set off with flags of all nations and festoons of oriental transparencies, the show conducted by the San Francisco Motor Club closed on Saturday night, 11th inst., after a week's run. Pavilion Rink, in which the exhibits were housed, was transformed into a maze of color, the flags and the strings of Japanese lanterns illuminated by incandescent bulbs providing embellishment that if simple did not lack "warmth" and effectiveness.

The show was as notable, however, for what it did not contain as for what it did hold. It was promoted by the club in the face of the vigorous opposition of the local trade association, which would have nothing to do with it. It was somewhat surprising that as many as 26 dealers were "rounded up" and induced to display their cars. The list of exhibitors follows:

Automobiles: White Co., White pleasure and commercial; Stoddard-Dayton Motor Co., Stoddard-Dayton; Middletown Motor Car Co., Alco pleasure and commercial; American Motors Co., American; Thomas Flyer Co., Thomas; Wagner Motor Car Co., Palmer-Singer; A. B. Costigan Motor Co., Croxton; Corbin Automobile Agency, Corbin; Speedwell Motor Car Co., Speedwell; Auburn Motor Car Co., Auburn; A. J. Smith, Elmore; Walter C. Morris, Autocar; Haynes Auto Sales Co., Haynes; Pacific Coast Motor Car Co., Fiat; Cartercar Auto Co., Cartercar and Premier; E. Stewart & Co., S. G. V. and Crawford; Consolidated Vehicle Co., McFarlan and Crow-Elkart; C. A. Kleiber & Co., Gramm truck; Amplex Automobile Co., Amplex; Baker & Hamilton, Broc electric; Nestor Electric Vehicle Co., Bailey electric and Lansden commercial truck; Matheson Automobile Co., Matheson; Babb-Carter Co., Avery truck; Mercer Automobile Co. of Trenton, N. J., Mercer; Brush Runabout Agency, Brush.

Accessories: McTarnahan Vulcanizing Co., Fearis-Bray Welding Co., Kellogg Switchboard and Supply Co., Mohrig Tire Co., George P. Wells Automobile Supply Co., Keystone Motor Oil Co., Homo Carburetter Co., American Ever-Ready Co., Salama Tire Protector Co., John F. Rivalk Accessory Co., Fireman's Fund Ins. Co., Herald's Automobile Engineering School.

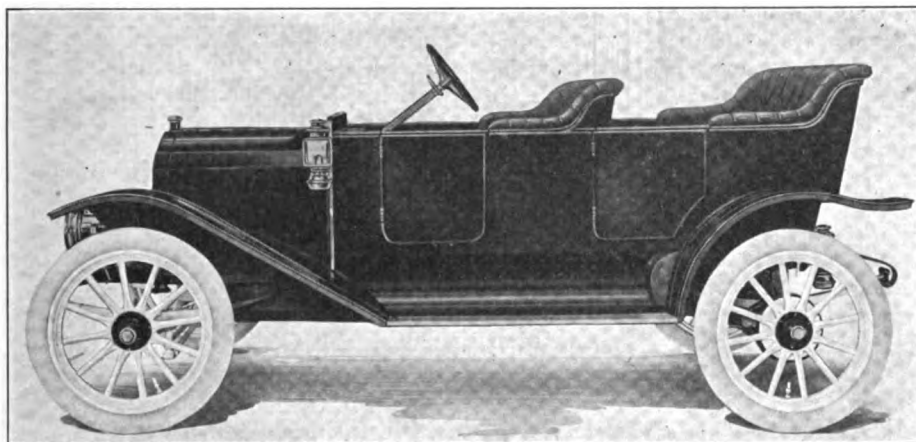
Mortorists of Manchester, N. H., have formed the Manchester Automobile Association and elected the following officers: President, Hoey E. Slayton; vice-president, Leslie M. Folsom; secretary and treasurer, Charles E. Merritt.

FLANDERS IN TOURING FORM

Detroit Production Acquires Five-Passenger Body and Other Improvements—
New E-M-F Model also is Due.

Following only a comparatively short time after the announcement of a reduction in the prices of the E-M-F and Flanders cars, the E-M-F Co., Detroit, Mich., this week made the further announcement that the line is to be extended. A new Flanders 20 closed-front touring car already is so well under way that it will be ready for deliveries about the first of April next, while it is intimated that a new model

Among a number of differences between the new model and the current chassis design may be mentioned such points as the adoption of a detachable exhaust manifold, which replaces the integral one now in use, the improved type of carburetter, the worm and wheel steering gear, instead of the present internal gear style, and the refined form of valve-operating mechanism which has resulted in a 20 per cent, increase in power. The rear axle, as a matter of course, is built much more heavily than before, and is equipped with brakes of double the width of face formerly employed. An even more striking improvement is that arising from the use of cast aluminum in the crank and gear cases instead of iron, as heretofore.



NEW \$800 FLANDERS CLOSED-FRONT TOURING CAR

E-M-F, also equipped with a closed-front touring body and listing at \$1,100, is to follow soon after. The latter will differ from the present car chiefly in point of body construction. The new Flanders, however, differs materially from the present style and may be described as a condensed form of E-M-F. It will sell for \$800, which is exactly \$100 more than the list price of the current model.

While it practically is a smaller E-M-F, the new car in reality is a blending of E-M-F and Flanders styles, having many of the specifications of the former expressed in the dimensions of the latter. As this implies, the new model will have a three-speed selective sliding gear transmission with the gearset mounted on the rear axle. It will also have a 102-inch wheel base, instead of 100 inch, and will be fitted with a five-passenger closed-front body of approved lines and built according to E-M-F standards of construction. The accompanying illustration shows the appearance of the new car, indicating in particular the straight line effect, liberal seating arrangements, full mud guard enclosure and generally comfortable and useful appearance of the machine. The body is of aluminoid and wood construction with inside lever arrangement, concealed door latches and other provisions for a clean exterior.

The engine is cast en bloc, the cylinder dimensions being $3\frac{1}{2} \times 3\frac{3}{4}$ inches, bore and stroke. It is equipped with dual ignition using the Splittorf magneto, vacuum-feed oiler, and pump water circulation. The radiator, which is of large capacity, has been raised sufficiently to allow the starting crank to project below it, instead of coming through it as before, the result being to alter the front aspect of the car slightly. The standard tire equipment is 30×3 inches in front and $30 \times 3\frac{1}{2}$ in the rear. The total weight of the car is 1,600 pounds. The standard equipment includes gas headlights and generator.

Hoosiers Form Permanent Organization.

The Indianapolis Automobile Trade Association, which although but loosely knit and existing chiefly to promote and conduct a "show week" or "carnival week" once each year, has become a permanent organization and henceforth will deal with the general welfare of the Indianapolis trade. Sixty-seven tradesmen were present at the meeting last week when this decision was reached. They elected permanent officers as follows: President, F. I. Willis; vice-president, Harry Archey; secretary, J. B. Orman, and treasurer, F. L. Moore. Directors: G. A. Weidley, C. P. Henderson and R. H. Losey.

THE PASSING OF PENNINGTON

Death Ends Picturesque but Crooked Career of Notorious Get-Rich-Quick Man—His Automobile Schemes.

E. J. Pennington, who died in Springfield, Mass., last week, was one of the men who helped to make automobile history. The pages which he wrote, however, were not of the wholesome or inspiring sort. His career was a long and checkered and crooked one, and while it was full of wonder-working of a peculiar sort, nothing was more wonderful than the manner in which he time and again was able to keep out of jail. He always contrived to keep just ahead of the law or to placate his victims in some way. If not the original get-rich-quick man, as the term now is understood, Pennington certainly was one of the first of that ilk. Early in his life he mapped out a devious path for himself. Born in the little town of Moore's Hill, Ind., in 1858, nothing that he ever did suggested that his father was a preacher of the gospel.

Originally he secured employment in Cincinnati as a pattern maker, where he obtained a slight knowledge of machinery which afterward he used as a basis for erecting air castles and concocting so-called patents which he sought to exploit. His first promotion, so far as is known, was when he induced a Cincinnati truckman to part with \$5,000 to set up a machine shop. The truckman never saw a penny of his savings again, but Pennington in 1887 visited his birthplace and founded what he called the Standard Mfg. Co. It quickly proved a failure. Pennington then visited the president of a bank in an adjoining town and so plausible was his tongue that he prevailed on the banker to believe that the factory in Moore's Hill was coining money from a patented wooden pulley it was supposed to be producing. Pennington induced the banker and a committee of the banker's fellow townsmen to visit Moore's Hill and inspect the factory. When they saw it it was belching smoke and was a perfect beehive of industry; "orders" were piled high in the office. The appearance of prosperity was sufficient for the committee. The \$50,000 which Pennington demanded as the price for removing the factory to the neighboring town promptly was forthcoming. The factory was duly removed and Pennington soon obtained complete control. It was chiefly remarkable for its failure to pay dividends, but employing the same methods, Pennington removed the plant to still another little town in Indiana, where forged bonds entered into the transaction. Tiring of wooden pulleys, he worked a scheme whereby scores of whisky distillers were "done good and proper." He was indicted for

this offense but made his peace in some way and then turned his attention to the exploitation of a monorail traction company, which also cost many people in Ohio and Indiana some good round sums. Then for a change he visited Kansas, where he made another "clean-up" with a million dollar scheme to build grain elevators. Meanwhile he "invented" an airship which was widely heralded in the public prints.

Pennington was a fine looking, finely built six-footer, and with a gift of gab that was in keeping with his appearance. He could hold up his end in any company. He could strike terror or inspire awe or admiration with equal facility. No underling could stand before him and he asked no odds of the highest heads in the house.

When his "airship" lost its charm, Pennington bobbed up in Cleveland where he organized the Motor Cycle Manufacturing Co., in which he interested W. J. Morgan, one of the well-known merchants of that city. He had two of the machines built by a bicycle and carriage-making concern in Cortland, N. Y., and after some spread-eagle advertising he brought them to the bicycle show, which was held in Madison Square Garden in New York in 1895. So far as known they were the first motor-propelled vehicles publicly exhibited in his country. They were not bad looking machines and that they would run was evidenced by demonstrations which were given in the basement of the Garden and on the street outside. The public, however, was not ripe for such vehicles and they aroused only cursory interest, which was just as well, as it afterwards became known that the tiny motors which were employed were made of brass and overheated in no time at all. Pennington claimed that his motor employed kerosene for fuel, but later it was discovered that this claim, like most of his other claims, was merely a magnificent exaggeration. It employed gasoline, but Pennington was too shrewd to picture or permit the insides of the motor to be seen. When he was exploiting these motorcycles, he announced that his patents covered "any fluid engine wheeled vehicles having pneumatic tires," a claim staggering in its immensity. The wonder is that he did not attempt to make use of it when the automobile industry began to develop. However, when his motorcycle scheme went the way of all his other schemes, he organized in New York what he called the American Rapid Vehicle Co., with capital of about \$40,000,000. He attracted a number of reputable men and opened impressive offices in Broad street where he endeavored to sell stock and where he also "demonstrated" a gas motor which entered into several of his subsequent schemes. Its operation was artfully concealed and later it was found that it was run by electricity.

At that time Pennington was in clover. He seemed to be rolling in money and

never failed to impress the visitor with his great wealth. He had a watch, on the case of which his initials were encrusted with diamonds, and a gold match safe which was similarly blazed with jewels. He also possessed a handful of unset diamonds which it was his habit to carry loose in his trousers pocket. In conversation with a "prospect" he always found occasion to remark the time of day and for displaying his watch. On similar occasions, and in fits of studied but apparent abstraction, he would toy with his jeweled match safe or remove the loose diamonds from his pocket and nonchalantly permit them to run from one hand to the other as if they were so many marbles. Several years later the watch was displayed in the window of a Bowery pawnshop.

When his Rapid Vehicle scheme petered out, Pennington went to England, where he mixed with a couple of exploiters of his own kind. There he asserted to have given King Edward, then the Prince of Wales, his first ride in a motor car. He occupied himself with aerial and automobile schemes and among other things formed what he called the British Aerial War Syndicate, in which he interested the government. He made folks believe he had a line of armored motor-propelled war cars that would make short work of any enemy. He is said to have cleaned up more than half a million dollars in London. When he got in too deep there, and a bicycle exploitation in which he and his fellow conspirators were joined "blew up," he was forced into the bankruptcy court, and when things grew too hot he hurried back to this country, where for a time he disappeared. When he recovered his nerve he formed the Standard Oil Automobile Co. in St. Louis, in connection with which he sought to exploit his "little joker," a gas engine which would burn any sort of oil and could be attached to any sort of vehicle. He kept himself in the background of that project, but the Motor World's investigation uncovered him, and, despite threats, its exposure led to the downfall of this Standard Oil Automobile Co., the name of which, undoubtedly, was selected to assist the Pennington scheme.

Thereafter Pennington roamed the country, living by his wits. He undertook to capitalize his gas engine in Carlisle, Pa., but the Motor World again smoked him out, and forced him to seek new fields. Later he appeared in Toledo with a scheme for a nutless and boltless truck, and still later in Grand Rapids, Mich., with a marvelous spark plug which simply would "lick creation." Both of these schemes were of short life, however, but the adventurer found willing ears in Racine, Wis., and came near getting away with a pile of Wisconsin money in a motor boat scheme when his identity was made wholly plain, and he had to disappear.

The man's nerve was superb. After a

lapse of years he repeatedly appeared in places where his frauds had been perpetrated, but his imposing presence and his remarkable tongue rarely failed to carry him through. He several times attempted to defraud the very people whom he had defrauded years before, and there is no doubt that he succeeded many times. Once when he returned to Cleveland his second wife—a woman on whose account his first wife had divorced him—died. In his sorrow he went to a lithographer whom he had swindled out of \$5,000, and who had threatened to shoot him on sight, and instead of being shot he persuaded the Cleveland man to allow him, temporarily, to place his wife's coffin into the family vault of the lithographer. Then he ordered an expensive coffin for her and she was buried. A few hours afterward he married another woman. The undertaker himself was never paid. This instance is but one of the many which shows not only the man's magnificent nerve but his utter lack of conscience.

Depending on the state of his finances, no scheme was too large or too small to interest him. He was a piker and a plunger in turn. Neither widow nor orphan was safe when he needed the money. In connection with a couple of women he once used an alleged Newsboys' Home, and on another occasion an alleged Hospital Fund as means of obtaining coin.

Two years ago he again appeared in New York and undertook to organize a \$50,000,000 concern to manufacture air ships 1,200 feet in length and capable of making 9,000 miles on a single voyage. Despite the improbability of such an invention he actually induced several well-known financiers to promise their support, one of them an engineer who is identified with one of the largest ship building concerns in the country. Just when the money was in sight Pennington's proposed Aerial Transit Co., as he called it, was exposed by a New York paper. It collapsed instantly, but Pennington's ability to bluff remained with him. He instituted a libel suit for \$1,000,000 against the newspaper which exposed him, but the suit was thrown out of court. Less than a year ago he appeared in Springfield, Mass., where he announced his intention of establishing an airship school. While there he brought his bluff to bear against the leading manufacturer of motorcycles in this country, whose factory is located in that city. He claimed that the manufacturer was infringing his motorcycle patents and intimated that in due course he would proceed against all manufacturers of motorcycles, as well as against all who had to do with airships. The manufacturer refused to be bluffed, however, or to come across with the money that Pennington demanded, but, nothing daunted, the unscrupulous adventurer actually instituted a suit for \$500,000 several weeks since.

MOTOR SLED OF THREE-MAN DESIGN

**Tried Out on Saranac Lake, it Develops
Great Flights of Speed—Some of Its
Structural Features.**

On the icy reaches of Saranac Lake, N. Y., three young men, H. Webb Hyde, J. B. Marvin and C. S. Palmer, and hailing from Boston, Mass., Louisville, Ky., and Saranac Lake, N. Y., respectively, have evolved a

long, is made of three inch channel steel and is carried in the front on four semi-elliptic springs mounted on the front sled. In the rear the frame is carried on a smaller sled which is pivoted in the center to permit of the vehicle being steered. Coil springs serve to absorb the "road" shocks in the rear. The machine has two sets of runners and two propellers which are used under varying conditions of wind and weather. The runners in one set are rounded and are used when there is

an angle of four degrees; a universal joint takes care of the remainder of the inclination of the propeller shaft.

The sled scales 1,400 pounds complete, and owing to its comparative lightness and the resiliency of its springs, speeds upwards of a mile a minute have been attained over rough ice. It is not always "smooth going" on "Blasphemia," however, and in passing over an unusually rough piece of ice the machine once turned turtle while traveling at a rate of 65 or 70 miles



"BLASPHEMIA" READY TO PROFANE THE VIRGIN WHITENESS OF THE FROZEN SARANAC

"wind sled" which they have named "Blasphemia." Though the sled is somewhat similar to several other vehicles of this character which recently have made their appearance both in this country and abroad, the particular significance of its name is suggestive, but when three persons of an inventive turn of mind and hailing from different points of the compass get together startling results are likely to be the rule rather than the exception.

Credit for the idea of the sled belongs to Mr. Palmer, who, assisted by the other two gentlemen, constructed the contrivance. Differing from other such vehicles, the sled is made entirely of iron, except for the propeller and seats, which are of wood. The main frame, which is 23 feet

a firm layer of snow on the ice. The others are skate-like and are used when the ice is clear. The larger of the two propellers, which is seven feet in diameter, is used when there is snow and the other which is smaller in diameter but larger in pitch is used when there is no snow.

The engine is really the most interesting part of the whole and is a six cylinder, 1909 Model H, air cooled Franklin of 42 horsepower, which, prior to its adoption for the propulsion of "Blasphemia" had done 28,000 miles over rough Adirondack roads. In order to overcome part of the angle necessary in setting the propeller high enough to clear the ice, and to overcome its tendency to lift the sled and cause it to "burrow," the engine is tilted forward at

an hour. Emulating the redoubtable Kelly, the occupants "slid"; so did the sled. But in spite of the fact that the motor plowed a hole some nine feet long, five inches deep and about a foot wide, it was as little hurt as were its passengers.

The condition of the ice on the lake has not been of the best, and the owners of the craft estimate that with clear ice a speed of 100 miles an hour is well within the possibilities of their contrivance.

Elected at the annual meeting of the San Antonio Automobile Club, the following officers will serve for the ensuing year: President, Robert Maverick; vice-president, R. W. Carr; secretary, Dr. G. M. Fairfield; treasurer, Dr. R. A. Goeth.

EFFECTS OF INTERPENETRATION

How Molecular Interference Opposes Ball Bearing Action—Elasticity Also Enters Into Account.

Common as is the ball bearing, certain widespread misconceptions exist as to its inherent qualities which are difficult to eradicate. For example, the ball bearing usually is considered a frictionless bearing, despite the cautious phraseology of the bearing manufacturers themselves, who prefer to call them anti-friction. But, as a matter of fact, friction and motion are inseparably connected, although in all types of anti-friction shaft mounting resistance is lowered almost to a negligible point. What friction exists is a measure of the imperfection of mechanical processes. Were it possible to construct mathematically spherical balls and perfectly circular races using inelastic material, the slight difference that now exists between theory and practice would be eliminated. The idea is elaborated by I. F. Springer, in *Cassier's Magazine*, who says:

"We must not imagine . . . that rolling friction is no friction and that a ball-bearing constructed with perfect accuracy would have absolutely no frictional resistance. Rolling friction may be only a small fraction of the corresponding sliding friction, but it is real just the same. There are two distant frictional elements in rolling. Because materials which we term solid are not absolutely so, but possess structure, it is mechanically impossible to produce surfaces absolutely smooth. So that when a highly polished steel ball rolls upon a steel surface equally polished we are bound to conceive that mutual penetration occurs at the point of contact. The introduction and withdrawal of material particles occurring in the interpenetration must give rise to minute local deformation and abrasion. The consumption of energy occasioned by overcoming the resistance thus set up constitutes one element in rolling friction. Just as the most highly polished surfaces really possess a minute roughness, so metals and other solid materials are not absolutely incompressible under load.

"There is a yielding of the metal, both in the ball and raceway, resulting in an evanescent deformation. There is a flattening of the ball in the region of contact. Just how far the locus of deformation extends no one, probably, knows. But the deformation is real and must be taken into account. The raceway is likewise locally deformed. The production of these deformations consumes energy. We have here the second element in rolling friction. In steel bearings, it is probably much the greater of the two.

SOME OF THE MEN WHO SELL STROMBERG CARBURETTORS



From Left to Right—W. L. O'Neill, C. W. Stiger, J. R. Ballinger, Harvey Goodwin, Thomas M. Hart, F. W. Eisele, N. H. Miniter and William R. Johnson.

"In sliding friction, as with a journal in its box, there is the work concerned in interpenetration and in local deformation. But the great consumption of energy centers in the abrasion consequent upon the movement of interpenetrating surfaces perpendicular to the common normal. That modern investigations as to the behavior of lubricants have provided a means of securing heavy reductions of this class of friction is not to be denied. It seems possible, also, that under ideal conditions a journal may really be rotating upon a film of oil entirely out of contact with its box. At present, however, the elimination of friction is, for the bulk of the cases, to be sought in the direction of the substitution of rolling bodies for sliding ones.

"The development of the modern ball-bearing has not been an uneventful one. Many corpses strewed the road. The records of the United States Patent Office disclose hundreds of ball-bearing inventions. . . . In the old bicycle days there were many varieties of ball-bearing.

And there was a great deal of success. But the duty was light both as to load and to speed. And so it came to pass that when, under the spur of the fine results with the bicycle, this device was applied to real machine duties, it soon became apparent that something was wrong. Even with the bicycle, balls would occasionally break. But no great harm would result. Designs which really assumed that the balls were spheres, that the races were round, and that steel was incompressible were successes with the small demands of the bicycle in spite of failure to realize every one of these particulars. The same or similar designs proved very poor with the severe requirements of the automobile and other machines. The best designs of today also assume that the balls and raceways are round. But the necessity for their being so is now very well understood. Steel is no longer implicitly assumed as indeformable. It is now dealt with on the basis of exactly what it is—a hard, elastic, and compressible material."

VALVE AND SPRING COMBINED

Simple German Invention for Quick-Acting Check—Applicable to a Wide Variety of Purposes.

It is a peculiarity of the construction of most quick-acting valves that they do not permit absolutely unrestricted flow through the ports which they guard, this being particularly true of valves of the poppet and butterfly types. In the Gutermuth valve, which has been in use abroad for a number of years, but which has only just been introduced in this country, this difficulty is entirely overcome. The Gutermuth valve, which is the invention of Prof. Max Friedrich Gutermuth, a German scientist, is produced in this country by the Bingham Manufacturing Co., of Cleveland, manufacturer of the Bingham compensating carburetter

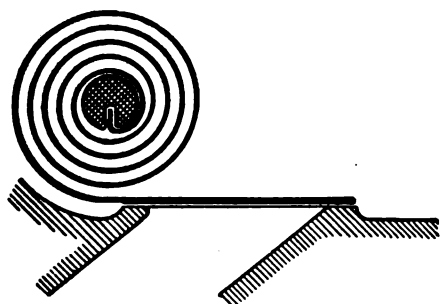


FIG. 1

and of an independent compensator which recently was described in these columns. The Bingham company has adopted the new valve for its carburetter and also is producing it for various other purposes to which its qualities render it particularly well adapted.

The construction of the valve, which is exceedingly simple, can be described in no better way than by likening it to a sheet of spring metal wrapped around a mandrel leaving a small amount of metal perfectly flat, the flat end serving to cover the open port and acting as the movable portion of the valve. In practice the convolutions of the coiled part, which furnishes the spring action, are spaced slightly away from the spindle so that the action is precisely the same as that of a watch spring. That is to say, as the flap is raised from the valve seat by pressure from below, it is lifted bodily from the seat, instead of hinging about a point in or near the plane of the seat. The spring action, furthermore, is derived from the entire length of coiled metal so that there is no unequal action in the spring itself.

In constructing the valve the metal is first blanked out and an edge turned up, which is slipped into a slot in the mandrel which is then rotated about its own center until the proper amount of the sheet has

been formed into a coil. It is then withdrawn from the mandrel and slipped over a spindle of slightly smaller diameter, the turned-up edge engaging a slot. In adjusting the valve in position, the spindle is turned until a proper amount of tension is given to the spring and then locked in position in the usual way by means of a key or set screw or by any other method which may be selected.

The accompanying illustrations, Figs. 1 and 2, indicate the construction of the valve

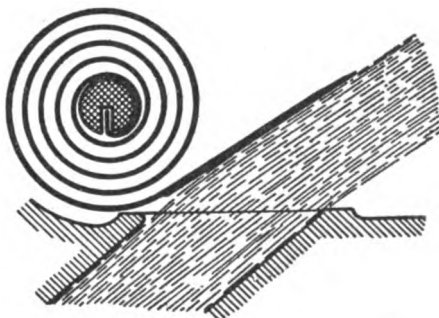


FIG. 2

and also show it in action. Fig. 2 in particular illustrates an important feature of its construction, which is that it always is mounted over a seat which is inclined to the line of flow. As a result of this the valve is enabled to swing clear of the port with a minimum of movement, thereby eliminating any bending of the stream lines and also reducing the amount of actual motion necessary to secure a clear passage. The other illustrations, Figs. 3 and 4, show valves of the butterfly and poppet types and indicate the manner in which they tend to obstruct the flow even when opened fully.

As indicating the flexibility of the valve, it may be explained that an attachment

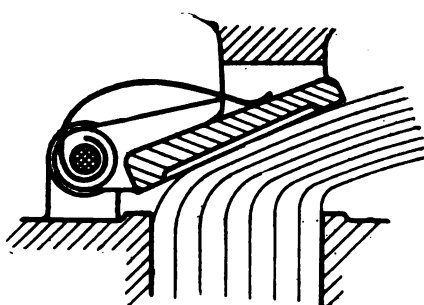


FIG. 3

having a flap of 3x4 inches surface and 1/32 of an inch thick, having four coils, may be lifted to an angle of 30 degrees with a total pressure of only two pounds, which corresponds with an adequate port area to a unit pressure of one-fourth pound per square inch. At the same time a valve of this size can be adjusted to resist a working pressure of no less than 150 pounds per square inch. For certain purposes where very light spring action is desired, it sometimes is feasible to employ a very thin spring and to strengthen the

flap by a metallic reinforcement. The valve can be made in all sizes and is useful for carburetter air valves, the check valves of two-cycle engines and for many other purposes where its low resistance and quick closing features would be particularly desirable and a great advantage.

Simple Method of Case-Hardening Parts.

It often happens that small parts used in making repairs require to be case-hardened, and the operation, far from being difficult, is quite simple enough for the average owner to accomplish. The chemical which is used, potassium cyanide, is a particularly deadly poison, and though it sometimes is hard to obtain for this reason, it usually may be purchased from any druggist if its intended use is explained. It is a white crystalline substance, and, needless to say, great care must be taken to see that none of it comes in contact with the hands from whence it might reach the mouth with fatal results. The object to be hardened first is heated to a cherry red, and as it is to be maintained at this heat for several minutes a gas stove prob-

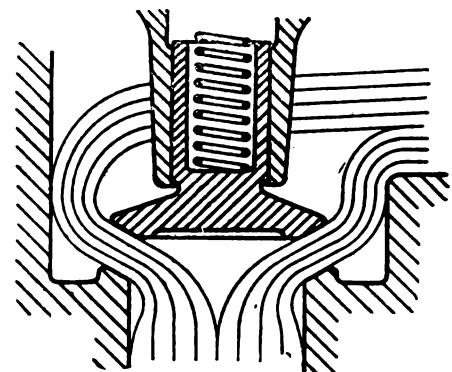


FIG. 4

ably is the best thing to use for this purpose. While it is still at cherry heat a small piece of the crystal is placed on it and allowed to remain till it has melted sufficiently to cover the whole of the object with a thin coating, which it will do of its own accord. The object is then removed from the fire and after it has cooled to a dull red immediately plunged into cold water. If, after two such treatments it still is possible to mark the object with a file, the operation must be repeated a third time, though it is seldom that this is necessary.

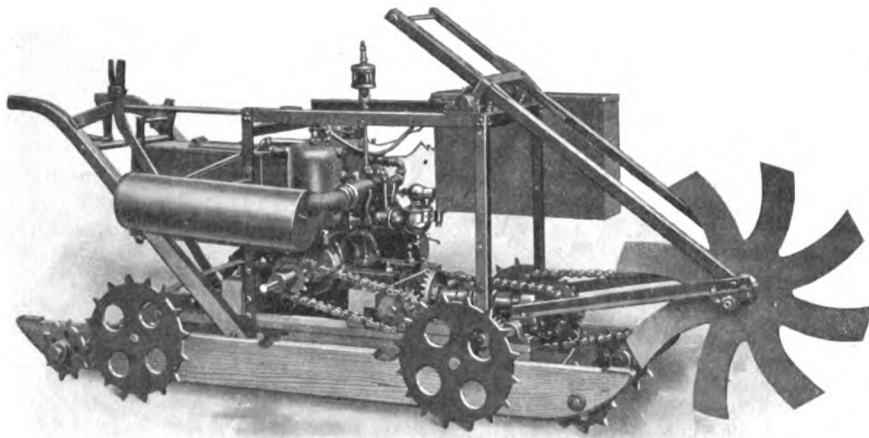
Softening Metals Before Hammering Them.

Brass or copper which is to be bent or hammered should first be annealed, or softened, owing to its tendency to split when worked. This may be accomplished by heating it to a dull red and plunging it into cold water. The annealing should be done several times during the process of the work if much hammering is necessary, and care must be taken not to heat the brass to more than a dull red or it will disintegrate.

MAKING GASOLENE CUT REAL ICE

How a Massachusetts Man Makes it Serve that Purpose—Ingenious Machine that Lightens Time-Honored Labor.

Though technically it belongs in the category of motor propelled harvesting machinery, the Vary ice machine, which is shown by the accompanying illustration, is far removed from the apparatus which usually is embraced in the binders, reapers, threshing machines or other such implements which are utilized in the harvesting of agricultural products. The designation of the Vary ice machine itself is some-



THE VARY MOTOR-DRIVEN ICE SCORING MACHINE

what misleading in view of the fact that the term "ice machine" usually suggests apparatus for the manufacture of artificial ice, whereas this machine is not of that variety, but is used in cutting natural ice into blocks for the market. Its field of usefulness, however, is not confined to this stage of the industry, as it may also be used in ice houses to separate the blocks which have frozen together while awaiting shipment.

The usual practice in harvesting ice is to use a "plow" which is drawn by one or more horses and which grooves the field, dividing it into a number of rectangular blocks. After the field has been grooved an incision is made at one end of the groove and men with saws proceed to separate the blocks, after which they are drawn up on sleds or wagons and carted to the store house. The method is old fashioned and necessarily slow, and it is to relegate it to the limbo of forgotten things that the Vary machine was designed. With it, it is claimed, one man can do the work of six in a fraction of the time required by them, and the necessity for sawyers is eliminated.

The machine complete weighs between 900 and 1,000 pounds, and is carried on wooden runners shod with iron to which

eight toothed wheels are attached. The power plant consists of a two cylinder two cycle vertical motor which is set transversely in the frame and connected to the circular cutter and the traction wheels by means of chains. Operating at maximum efficiency the cutter makes 1,800 revolutions in one minute during which time the machine moves forward 52½ feet, cutting a groove approximately seven inches in depth. The depth of the cut is adjustable and is regulated at the will of the operator by means of a lever which controls the vertical movement of the cutter arms. For an extra deep cut a larger diameter cutter is substituted for the one generally used, and for wide cuts two cutters are placed side by side. It is estimated that in nine

hours' work the Vary ice machine, which is made in Woburn, Mass., by a company of that name, can groove a field of 6,000 blocks on a gasolene consumption of five gallons.

Iowa Votes to Inspect All Gasolene.

All gasolene sold in the state of Iowa hereafter will have to be tested, whether used for power, heat or light, according to the terms of a bill introduced in the senate of that state by Senator Brown, of Decatur, which requires that in no case shall the test be lower than 63 degrees. The bill was passed unanimously, it having been declared during the discussion of the measure that for some time Iowa has been made the dumping ground for the lowest grades of gasolene, on account of the absence of satisfactory regulations for official inspection.

Ohio Senate Sets Age Limit for Drivers.

Following a spirited debate in the Ohio senate, a bill introduced by Senator Cetone, to make it unlawful for any person under 17 years of age to operate a motor car, was passed by a small majority. The bill provides for a heavy fine in the case of a "first offender," and for jail sentences in the case of "chronic malefactors."

WHEN LARCENY IS PERMISSIBLE

Remarkable Situation Created by Wrecked Car Left at Roadside—Court Refuses to Hold Pilferer of Parts.

That it is not larceny to take the parts of a wrecked automobile from the roadside is the somewhat surprising decision of the Circuit Court of Newcastle, Ind. Of course, the judge did not say so in those words, but the effect of his decision made it so appear. It all came about as the result of an accident in which a touring car was totally demolished by a trolley car belonging to the T. H., I. & F. Traction Co. In the car at the time of the collision was the owner, Perry Engle, who lost his life. His widow duly brought suit against the traction company, and in addition to asking damages for the death of her husband she demanded the value of the wrecked car, and while waiting for the matter to be adjusted refused to claim the wrecked bunch of machinery which formerly was an automobile. The traction company likewise declined to accept the car, and it remained lying beside the company's tracks for several weeks—a prey to the elements and the passer-by.

Marion Trexler, a young man with an eye toward the main chance, started to pry loose all kinds of accessories and parts, and had collected three good-sized boxes full of stuff, when at the psychological instant the arm of the law intervened and stopped him from further appropriations by putting him in jail. When his case came to trial last week the traction company refused to acknowledge ownership of the car, as that would have amounted in fact to an avowal of responsibility for the accident, and would have influenced the damage suit then pending in another court. For a similar reason Mrs. Engle likewise refused to claim it, and, as there was no legal ownership established, the young defendant had to be discharged. He was not even compelled to restore the parts he had taken away. It is related that immediately after the decision had been rendered several persons in the courtroom made a bee-line for the traction company's tracks to appropriate the remainder of the car, provided there was enough of it left to take away.

Ohio Strikes at Testing Cars on Highways.

If the bill introduced in the Ohio legislature by Senator Cretone is enacted into law, testing cars on the roads of that State will prove an expensive enterprise. The bill provides penalties of from \$50 to \$200 for any manufacturer, dealer, tester or demonstrator who uses the highways for testing or demonstrating unfinished motor cars.

Mud Guards and How They Fulfill Their Mission

Mud, according to the Standard dictionary, is nothing more than "moistened earth or earthy matter," but to the motorist it is that and several other things, which, briefly stated, are the discomfiture engendered by a dirty car, the embarrassment of be-spattered clothing and added expense. While the last item, that of added expense, may perhaps be eliminated in the case of those who are so fortunately situated as to be able to overlook this feature, it cannot be neglected by the rapidly increasing number of individual owners, who, were it not for the present varieties of comparatively inexpensive automobiles and the attendant low up-keep cost, could not, in many instances, afford a car of any kind. The two former items always have been and always will be a source for complaint on the part of motorists whether they be plebian or patrician, and the cause of the trouble

quite so far over the wheel as it does in the former. The dotted lines in the drawing show the path taken by mud or water when thrown off the wheel, and it may be seen that in both cases it is thrown high enough to be blown back over the radiator and hood of the car. The most frequent forms of rear mud guards found are the same as these except that they are reversed,

this shape in use, few are carried down far enough in the front to prevent the mud being thrown up.

While the shape of the guards and their position has much to do with the cleanliness of the car, there are other factors, namely, side winds and eddy currents caused by the car's motion, which are responsible for a great deal of the trouble. Their effects, however, would be lessened considerably by properly shaped guards fitted as snugly as possible without interfering with the wheels.

Taxicab Passengers Not Responsible.

That a taxicab passenger is not in any way responsible for damages caused by the cab in which he happens to be riding, although it can be proven that the cab was going along at a faster rate than allowed by law upon the direct orders of such pas-

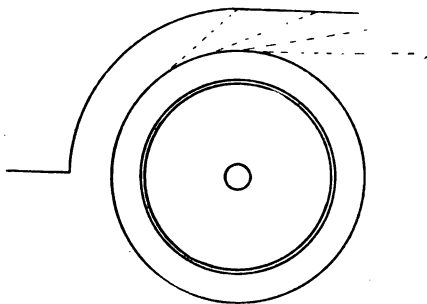


FIG. 1

is due to the design of the mud guards or fenders.

Theoretically, mud guards should prevent all mud or other foreign matter from being thrown over the car or its occupants. In practice the amount they actually deflect is in proportion to their design and their proximity to the wheels. With ill-fitting or poorly designed mud guards but little mud is stopped. That which is not stopped is thrown over the car and in some cases over its occupants, and therein lies the secret of the added expense. The paint on an automobile is not everlasting and the length of its life is governed to a great extent by the number of times it is washed. The added expense entailed by the frequent washings made necessary by inefficient mud guards is supplemented by the depreciation in the car's value brought about through its worn-looking and generally deploded appearance.

In Figs. 1 and 2, two common forms of front mud guards are shown, Fig. 1 being practically the same as Fig. 2 except that in the latter the guard does not extend

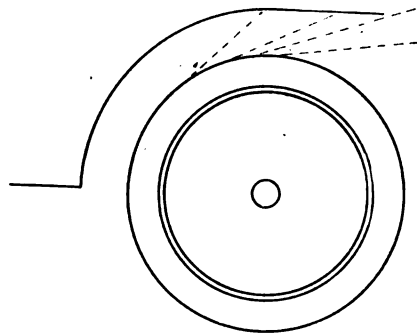


FIG. 2

and while they serve as a protection to the occupants of the car the back of the car body suffers.

When used at all, the form illustrated by Fig. 3 appears most frequently in the rear, though in some cases guards of this shape are used in the front. Here the guard hugs the tire more closely and mud or water is more readily deflected. Owing to the fact that there must be a certain amount of space between the tires and the guards to allow for the action of the springs, the guards cannot be fitted as closely as otherwise they might be, and to provide for this unavoidable shortcoming they are some-

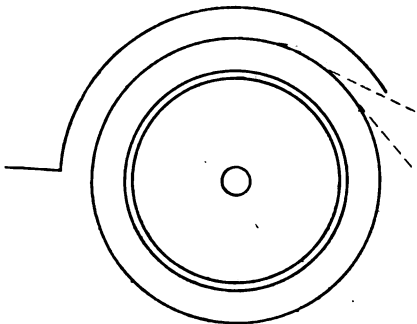


FIG. 3

times formed with lips on their outer edges.

Fig. 4 represents a variation of Fig. 3, and is practically the same except that a lip is added in the front and it is carried below the running board in the rear. While this form is the best of the four illustrated and affords greater protection than any of the others it seldom is used, and though there are many guards of approximately

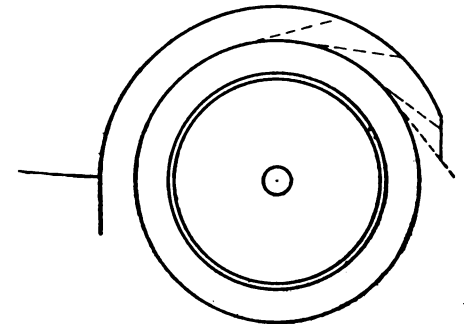


FIG. 4

senger, is the decision of Justice McCall, of the State Supreme Court of New York. The opinion was handed down last week in the case of a demurrer filed by James W. Taylor, who in company with three other passengers of a taxicab had been sued for \$25,000 damages. Arthur A. Canning, a New York merchant, brought the suit against the taxicab company, the driver of the cab and the passengers riding in it at the time, for the death of his eight-year-old daughter, Florence Adaline, who was killed by the speeding cab near Christopher street, New York City, October 23, 1909. In the complaint Canning charges that the quartet of passengers in the taxicab were boisterous and excited, and that while the cab was racing along at high speed across Waverley place two of the men leaned their heads out of the window and shouted to the driver: "Hit it up." Taylor, who was one of the men in the cab, demurred and Justice McCall sustained the demurrer, declaring that the passenger cannot be held responsible under the law.

Solving the Problem of the Second-Hand Car

"The second-hand car problem is not a problem at all," said C. C. Hanch, treasurer of the Nordyke & Marmon Co., in the course of an address made at the recent banquet of the Indianapolis Automobile Trade Association. "It is nothing but a condition, and 99 per cent. of the condition has been created by motor car dealers themselves. To show how the condition is created, I shall give a hypothetical, but true, example. A certain dealer recently allowed a customer \$1,500 in trade for a 1907 model of a certain car, which cost the user \$1,600 in the first instance. The condition has largely grown out of the erroneous theory that trading a new car for a second-hand one, and obtaining a few dollars 'to boot,' is making a sale. By the widest possible stretch of the imagination, such a transaction could not be classed within the category of salesmanship. Anybody can give away goods or sell them for the proverbial 'song.'"

"Automobile dealers who engage in such transactions will, in the course of time, when the motor car business gets down to a real competitive basis, find themselves in a different class and commanding a different consideration from what they now enjoy. It is unnecessary to say that the scale will be lower down. Some motor car dealers think they are now experiencing competition. Dealers, as yet, have not learned what the word 'competition' means, and in the final round-up, when the law of the 'survival of the fittest' will prevail, those who do not profit by the experience of other lines will find themselves in the laudable undertaking of trying to trade an aeroplane for a wheelbarrow.

"One of the fundamental troubles is, that some persons connected with the motor car industry have failed to realize that the interests of the manufacturer, the dealer and the user are all common. Any practice which conserves the interest of one party to the detriment of either of the others, will result, in the end, in conditions unfavorable to all parties. A bargain that is not good for the maker, the dealer and the user is a bad bargain for all parties concerned, including the party who gets all of the best of the bargain. The maker who cheats both the dealer and the user will ultimately pay the penalty by having no market for his product. The dealer who cheats either the maker or the user will pay the penalty by ultimately losing his trade or his selling lines. The user who cheats either the dealer or the manufacturer will pay the penalty in lack of service, when he gets in trouble, and inability

to make a fair bargain when he wishes to trade in or sell his old car. The laws of human nature cannot be abrogated so long as the sense of memory remains. Whenever one party to a transaction cheats the other party, it is human nature that the cheated will not forget, and probably not forgive, the cheater.

"I wish to state a few facts that are of interest:

"First—It is against the best interests of the dealer, maker and user to persuade a customer to sell a used car before he has had proper and reasonable service out of it, because of the excessive forced depreciation that at once ensues.

"Second—Trading a new car for a second-hand car, with a difference 'to boot,' either large or small, in no case creates or makes a sale of a new car. In result, it simply places a new car where a sale had formerly been created, and compels the dealer to create a market for the second-hand car, and, in many cases, the moving of the two cars—being one new car and one second-hand car—involves more labor than it would require to find a market for, and sell, one new car, and, at the same time, the profit on the trading transaction, in about nine cases out of ten, is less than the profit of making an initial sale.

"Third—Selling second-hand cars, in about seven cases out of ten, creates dissatisfied customers. Why? The purchaser of a second-hand car, in about four cases out of five, is misled, either unintentionally or intentionally, in regard to the condition of his purchase. His mind is poisoned against the motor car industry in general, and against the dealer and the second-hand car in particular.

"Fourth—Trading new cars for second-hand cars does not appreciably increase the number of cars used. New cars are now made, adapted to the pocketbook of any second-hand buyer.

"Fifth—If dealers did not make improvident offers for second-hand cars, owners would either sell such cars on their own account, keep them for emergency, or continue to use them regularly. In either of two events, the market for a new car would be left open, where, otherwise, a second-hand car would have to be sold.

"Sixth—Solution of the condition lies in the channel of utilizing some 'horse sense,' co-operating with and getting acquainted with competitive dealers, observing the experience of dealers in other lines—for instance, the typewriter man—and lastly, and by no means least, keeping a considerable quantity of salt on hand, to use in connection

with statements made relative to alleged offers of competitors for second-hand cars."

Factory Inspector Charged with Theft.

The arrest of Charles Waterman, chief inspector of the Maxwell-Briscoe Newcastle factory, for the theft of parts is expected to be followed by sensational disclosures. During his absence, Waterman's home in Newcastle, Ind., was searched and parts for a complete automobile, even to the tires, were discovered. He claims that he will be able to prove his innocence, but it is stated that investigations which are now being made indicate that the Newcastle factory has been systematically looted by an organized band of thieves. In fact, the stealing of automobile parts appears to have reached unusual proportions in the Indiana town during the past year, the thieves having repeatedly broken into loaded cars on the railroad sidings and made off with automobile parts to the value of several thousand dollars. The greater part of the loot, it is believed, has been shipped to larger cities.

Emergency Repairs for Leaking Radiators.

While it sometimes is possible for a novice to solder a leaking honeycomb radiator, there is always the danger that in repairing one tube others will be loosened. The better way is to be prepared for emergencies by carrying in the tool box a long thin bolt and a piece of sheet piston packing, or if this is unavailable a section of an old inner tube will serve. A leak may temporarily be stopped with this equipment by putting the bolt through the tube around which the leak occurs and drawing the bolt down firmly with a section of the packing or rubber between it and the radiator. A large washer and a section of the packing or rubber should also be put under the other end of the bolt to prevent damage to the radiator.

Squeaks that Develop in Windshields.

Windshields are often productive of a peculiar variety of squeak which is at times difficult to locate. The reason for the squeak is that windshields which are cut to conform to the shape of the dashboard seldom fit the way they should fit, which is to say that while they may appear to fit perfectly, there may be one or two high spots which rub. One way to obviate the trouble is to place a strip of felt between the dashboard and the filler board of the shield, which will not only do away with the squeak but protect the metal.

KING PROCLAIMED IN DETROIT

New Arrival is of European Descent with Old Northern Lineage—Has Many Promising Characteristics.

Points of novelty not infrequently are found in cars which are newly designed, but it is seldom at the present time that an entirely new product reveals as many individual features that may be recognized

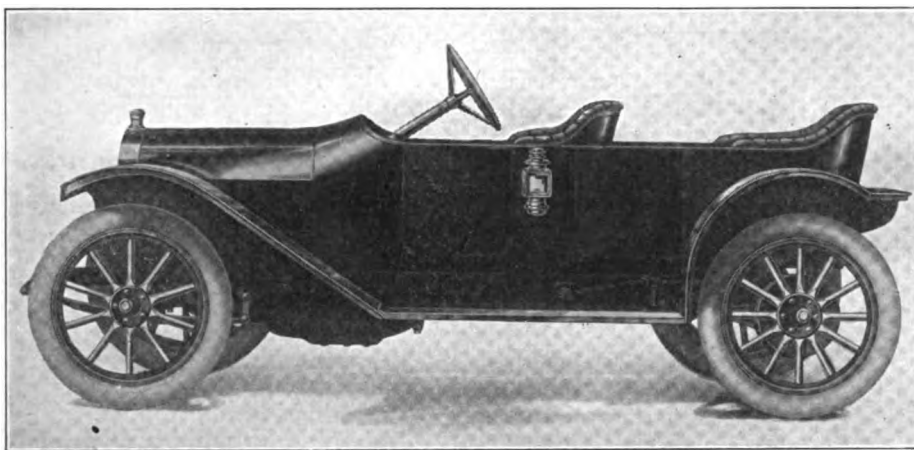
plete tool outfit, is built to sell for \$1,565. With ordinary lamp and horn equipment its price will be \$1,350. The roadster with full equipment corresponding to that of the touring car will sell for \$1,465 and for \$1,250 with ordinary equipment.

The only point of really radical design about the machine is the mounting of the rear end, which involves a new form of spring suspension and one which, while somewhat startling in its novelty, is not without its convincing qualities, even when

tween the spring leaves is calculated to afford sufficient shock-absorbing effect to prevent unpleasant rebounding action. The front springs are semi-elliptical.

The motor is of the long-stroke type with cylinder dimensions of $3\frac{3}{16} \times 5\frac{1}{8}$ inches, its rated output being 35 horsepower. It has a two-bearing crank shaft with 18 inch swing between bearings, and in general is of unusually compact and clean construction. The valves, which are mounted on the left side, are placed at a slight angle, instead of being vertical, the object being to permit the gases to pass in and out from the cylinders without traversing any long ports or passages. The valves are $1\frac{1}{16}$ inches in diameter in the clear, and their action is silenced by the complete enclosure of the operating mechanism by an ingenious cover plate. The exhaust manifold, which is unusually large, is cast integrally with the motor. Cooling is accomplished by thermo-syphon circulation and the Bosch dual ignition system is standard equipment, as already indicated, the magneto being mounted on the front of the engine in a transverse position and driven from the two-to-one gears by means of spiral gearing.

The clutch, which is mounted in the fly wheel in the conventional fashion, is of the multiple disk type, built with all steel contact surfaces. The change gear mechanism is of unusually short length and is simplified considerably by reason of the central position of the gear shifting lever. This arrangement permits the lower end of the lever to engage the shifting forks directly

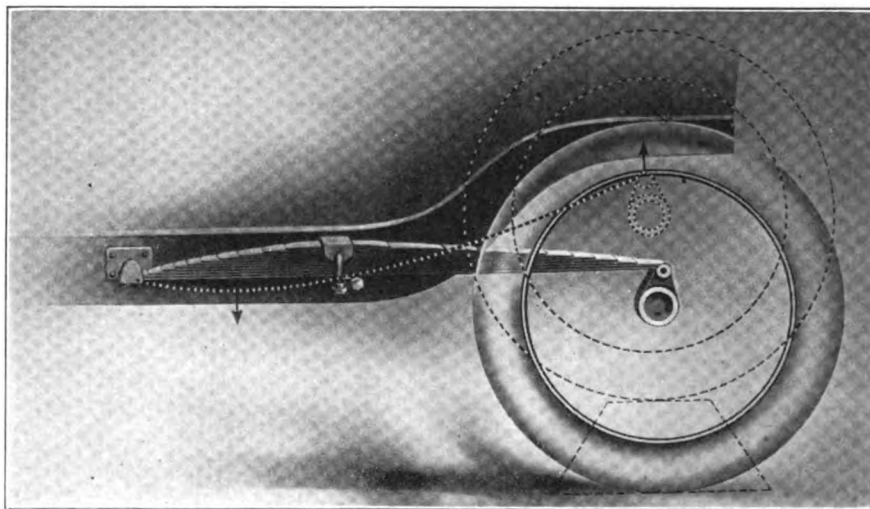


THE NEW KING 35 FIVE-PASSENGER TOURING CAR

directly as refinements of current practice as does the King 35, which has just been announced as the first product of the recently formed King Motor Car Co., a \$500,000 Detroit corporation. Although the car ostensibly is new in design, however, it is explained that its originator, who is Charles B. King, formerly known as the designer of the Northern cars, which held good repute in the earlier days of the industry, has been at work on it for two full years, prior to which he had spent two other years in studying the automobile situation in Europe. In consequence the new car is said to embody a blending of European and American ideas in the composition of which many undesirable features have been eliminated.

In all respects save one the features of the car are such as may be found in other recent products. That is to say, it has the block type of motor, built into a unit power plant with a three-speed selective sliding gearset and shaft drive. One of its strong points, in the estimation of a large number of motorists is that it is fitted for left hand drive with right hand gear control, the brakes being pedal-actuated, so that but one lever, placed in the center of the foot board, is required for control purposes. It is equipped with a closed-front body of the flush-sided type, with concealed door latches and torpedo style of dash and also in the form of a roadster. The touring model with complete equipment, which includes 34×4 inch tires on quick detachable demountable rims, mohair top, Bosch dual ignition, windshield, gas lamps and com-

viewed for the first time. As the accompanying picture shows, the familiar semi-elliptical spring has been abandoned in favor of a long flat member, which is shackled to the axle at its rear end and attached to the frame at two points, one of



NOVEL REAR SPRING SUSPENSION OF THE KING CAR

them being its forward end and the other a swivel point just forward of its center. The effect of this arrangement is to give a very long radial spring action in which the supporting member is flexed in both directions, upward in the rear and downward between the two points of support on the frame. The lever arm effect secured is not unlike that employed in the suspension of Pullman coaches, while the friction be-

without necessitating the use of any intermediate mechanism and therefore reduces the number of parts necessary, besides reducing the liability of difficulties arising from lost motion.

One of the unusual points in the design of the chassis is the mounting of the front axle, which, instead of being vertical, as is ordinarily the case, is set with its axis at an inclination of seven degrees to the ver-

tical. In consequence shocks received when obstacles are encountered in the road are taken up more nearly in line with the pivots, while the action of the front springs is correspondingly assisted, and for the same reason. The action of the steering gear also is improved by this disposition. The rear axle is of the full floating type with combination Hyatt roller and annular ball bearing equipment. The double rear wheel brakes, which are equalized, are mounted on 12-inch drums. Both are pedal operated, as before mentioned, the emergency pedal being controlled by a ratchet.

Of the special means adopted to simplify the mechanism and by virtue of which it is claimed that the total number of parts has been reduced to 411, perhaps the most noteworthy is the engine oiling system, which is pumpless. The fly wheel, as the illus-

tration of the power plant plainly indicate, is fully enclosed and the oil circulating arrangement is such that it constantly is bathed in oil. This lubricant is lifted by the wheel itself and thrown off by centrifugal force into an elevated trough from which it is led by gravity to the various bearings, subsequently being returned through the proper channels to the reservoir. The arrangement of the reservoir and feeding trough is such that a proper amount of oil will be supplied at all engine speeds and regardless of the inclination of the car on grades, while provision is made to prevent the flooding of either the forward or rear crank case compartments under such circumstances.

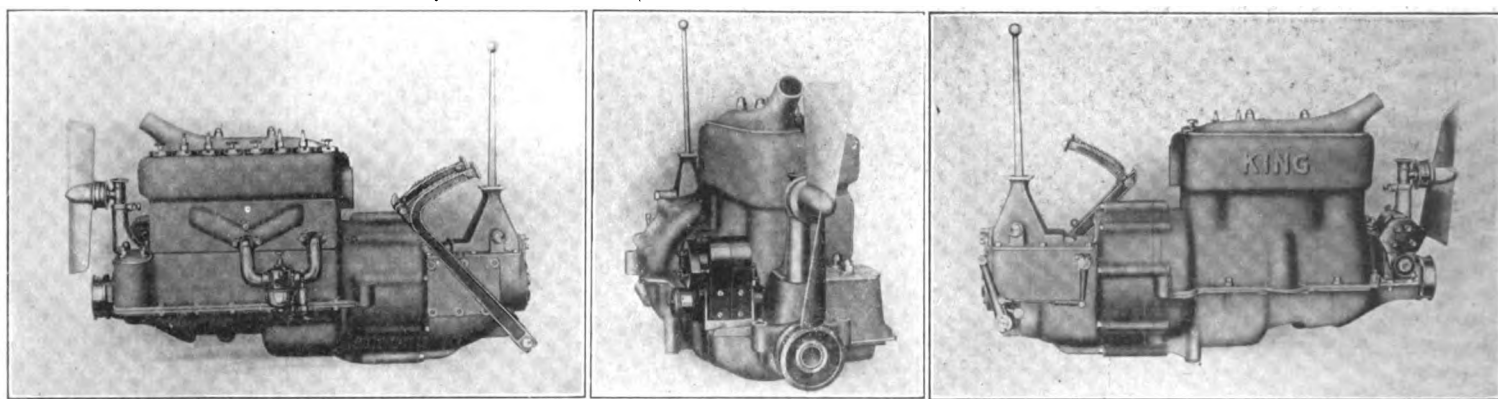
The complete line, which will be built on one chassis of 115 inch wheel base, is to include in addition to the touring car and roadster, the former being made in either closed or open-front styles, a three-passenger coupe. Advance models of the line will be ready in the late spring, while it is

probable, however, that in the near future the ability of a racing automobile to hold its own with a locomotive will be demonstrated, as Lewis Strang, manager of the J. I. Case Threshing Co.'s stable of Case racing cars, is having a car specially prepared for this purpose. It will have flanged wheels to fit the railroad tracks, and while the whole venture may appear a publicity stunt it has interest and value apart therefrom and will help settle the question as to whether an automobile can remain on the rails at high speed.

These folios are for sale by the Geological Survey at Washington, the price being but five cents per sheet. When 100 or more copies are ordered, whether of the same map or 100 different maps, a discount of 40 per cent. is given, 100 maps thus being procurable for \$3.

Automobile to Race a Locomotive.

Although the subject of a race between a railroad train and an automobile is one which has been much mooted and much pictured in certain varieties of public prints, a contest of this kind never has come to pass up to the present time. It appears



VIEWS OF KING POWER PLANT, SHOWING NEAT BLOCK MOTOR CONSTRUCTION

trations of the power plant plainly indicate, is fully enclosed and the oil circulating arrangement is such that it constantly is bathed in oil. This lubricant is lifted by the wheel itself and thrown off by centrifugal force into an elevated trough from which it is led by gravity to the various bearings, subsequently being returned through the proper channels to the reservoir. The arrangement of the reservoir and feeding trough is such that a proper amount of oil will be supplied at all engine speeds and regardless of the inclination of the car on grades, while provision is made to prevent the flooding of either the forward or rear crank case compartments under such circumstances.

In explaining the simple exterior of the motor, to which the elimination of the oil pump contributes in part, it may be indicated that the intake to the water jackets is through a large pipe on the right side of the cylinder casting, which is cored integrally with the jacket areas. The water outlet is secured by means of a combined cover plate for the cylinder casting and manifold, through which access may be obtained to the cylinders. The cover plate enclosing the valve mechanism, which already has been referred to as of ingenious construction, serves a multiple purpose. As will be observed from the illustration, it includes

expected that the entire output will be in the market by midsummer.

Uncle Sam's Road Maps the "Real Thing."

Of the very many road maps published by private enterprise none more than mildly compares with those issued by the United States Geological Survey, at Washington, the public sale of which now is being actively prosecuted by that branch of the government.

The maps are lithographed sheets showing the entire topography of the particular expanse of country which they delineate. All roads, however insignificant, and the character of each, are minutely shown, together with railroad crossings, bridges, ferries, state and county lines. Hills, valleys, lakes and even ponds are plainly marked; in fact, so complete are these maps that even the exact locations of houses are given. The hills and mountains are shown so that their elevations readily can be learned. Even streams that flow but part of the year are printed in such a way that persons using the maps can easily determine the fact. The scales vary from one inch to the mile to four, the sections in greatest demand, of course, being those made on the largest scale.

The maps are printed in colors, and in atlas sheet sizes, 20 x 16½ inches. Each

probable, however, that in the near future the ability of a racing automobile to hold its own with a locomotive will be demonstrated, as Lewis Strang, manager of the J. I. Case Threshing Co.'s stable of Case racing cars, is having a car specially prepared for this purpose. It will have flanged wheels to fit the railroad tracks, and while the whole venture may appear a publicity stunt it has interest and value apart therefrom and will help settle the question as to whether an automobile can remain on the rails at high speed.

Muddy Road that Saved Two Motorists.

That a muddy road and the reports of the weather bureau may be made important witnesses in an accident case was shown in Indianapolis, Ind., last week, when Arthur M. Robbins, and his chauffeur, George Miller, were charged with having in some way caused the injury of two women who were riding in a buggy when they met Robbins's automobile. The charge against the two men was speeding, but by referring to the records of the weather bureau and by questioning witnesses who were present on the road at about the same time it was clearly shown that it had been raining for several days, and that the roads were so muddy that high speed was a matter of impossibility.

Standardization of the Electric Vehicle

In recognition of certain characteristics which the electric vehicle enjoys apart from the gasoline-propelled automobile, a movement has been set on foot which, it is hoped, will lead to a profitable degree of standardization both in its construction and use. In the standardizing of the gasoline car, it must be understood, effort is concentrated almost entirely on rendering interchangeable such parts as are liable to require replacement; the need for interchangeability increasing in direct proportion to the probable frequency with which replacements must be made. In the standardizing of the electric, on the other hand, conditions are entirely different. So far as interchangeability is concerned, the average electric now leaves little to be desired. The electrical constitution of the vehicle, however, is such as to require specific charging conditions. These at present vary largely, both with the make and style of vehicle, and it is the lack of harmony in this respect which it is now sought to remedy.

The difficulty as at present recognized begins with the charging plug and ends with the motor—perhaps it might even be said, with the rear wheels. In the first place there is a distressing lack of uniformity in the matter of the charging plugs by which the batteries are connected to the charging board in receiving their energy. While it would have been a comparatively simple matter in the beginning to adopt a standard form of plug, corresponding to a standard lamp base, for example, the importance of establishing a conventional form of plug was not recognized in season to prevent the introduction of the several forms which are now in use. This lack of uniformity entails no difficulty whatever so long as only vehicles of a given type are to be charged at any given switchboard, or so long as any given vehicle can always be charged at points where its own particular style of equipment is used. But when it is desired to serve a large number of vehicles of different types from any given charging plant, or when it becomes necessary to charge a given vehicle at a number of different stations, as in touring or in long-haul commercial service, the objection to the non-standard plug is obvious.

Nor is the lack of standardization in charging facilities confined to the temporary connection between the battery and the source of charging current. Unlike a gasoline tank, which may be filled through a large funnel or a small one dependent only on the size of the filler orifice, the electric accumulator requires that the replacement of its exhausted energy shall

take place at a stipulated rate depending on its specific design and also on its type. More specifically, the voltage of any battery is determined by the number of its cells and also by its construction. Thus, a 40-cell acid, or lead, battery of the common type will require a maximum charging voltage of 102, whereas a 40-cell alkaline battery, of which the new Edison is the only type at present in common use, will require a maximum charging current of not over 72 volts pressure. The rate of current flow required in charging, as measured in amperes, also depends on the size of the battery as well as on its construction. This does not mean that a different style or size of charging apparatus must be employed for each style and size of battery to be charged, but it does mean that no one charging set can be used for all battery equipments with equal economy.

For example, it is possible to obtain a wide range of current flow by means of a rheostat on the charging board; rheostatic regulation, indeed, commonly is employed to secure the proper graduation of the current as the battery approaches its charged condition. But it follows that to attempt to accommodate a wide variety of batteries by this means would result in a considerable waste of energy, since the rheostat serves to reduce the energy output at the charging terminals by the simple process of diverting the remaining energy through the heating of its resistance coils. The regulation it accomplishes thus is about as economical as that which would result were it sought to vary the output of a gasoline engine by cutting out the ignition of one or more cylinders.

To carry the matter still further, the construction of the electric motor demands specific current conditions. Hence, in any attempt to standardize batteries, it follows that the motor design cannot be ignored; while the speed of the motor, which is dependent on its design, of course, governs the design of the transmission to some extent.

It does not follow from this that the entire design of the electric hinges about the selection of a successful standard for the charging plug, nor that the product of the electric vehicle industry of today must be entirely or even largely altered in order to increase its utility. It is the case, however, that the adoption of certain standards as to charging apparatus is destined to result in wide benefit to the industry, through rendering the service of electrics even more economical than it is at present.

That the establishment of such conventions will result in some overhauling of present designs in certain cases is a prospect which appears not in the least to appall those who are most vitally interested. As cautiously expressed by one authority, standardization of the most essential parts of the electric has now become "almost a necessity."

The subject was discussed very thoroughly at the last meeting of the Electric Vehicle Association of America, through which it is expected that the needed reforms may be accomplished. As to the requirement for uniform practice in regard to the number of cells, Alex. Churchward, the chief speaker, brought to bear the important central station argument, giving the three following reasons why it is desirable:

"First—Because of the nation wide interest being shown by all the central stations. It cannot be expected that a majority of central stations will go to the expense of providing facilities for charging at a great variety of voltages. Furthermore, the risk and trouble of changing or adjusting the charging range will not prove at all attractive, considering the small revenue derived, and the class of help employed, where a station is called on to do a general charging business.

"Second—That proper facilities for charging may be had at all public garages and the necessity of making it easy for these stations to obtain standardized charging equipment. It is to the central station that we must largely look to foster this industry and make the purchase and use of electric vehicles popular; therefore, we must seek to make their technical problem easy and the work attractive. Nothing will contribute more to this end than the adoption of standards of equipment and service wherever possible.

"Third—That a vehicle usually charged in a private garage while 'en tour' may be charged at any other garage or central station."

Another form of difficulty pointed out by the same authority is that motor efficiencies commonly vary at different speeds to a somewhat costly degree. Thus in one particular instance a loss of 2.7 per cent. in efficiency was observed between normal loads and overloads, due to loss at the brushes alone. To introduce the particular style of brush recommended as a solution for this difficulty, however, would entail a redesign of the motor, as he admitted.

"My own impression is," he continued, "that we must increase the voltage and de-

crease the current within practical limits. If we can do this, the number of cells in all the various makes of vehicles of a given capacity will be the same. The number of plates, or the charging current, will be approximately the same for the same sizes of vehicles though there may be any number of different makes.

"When you adopt one or more standard voltages, then the charging plugs, cables and resistances, etc., can be made to take care of all makes of vehicles; and you will give the Central Station man a chance to get after customers and boost the electric vehicle for all he is worth."

As indicating the variety of present practice in respect to the number of cells in use and the different charging voltages required, the following table is given, which shows the maximum charging voltage required for each style of equipment:

Number of cells.	Maximum charging voltage
Acid—	
10.....	26
12.....	31
14.....	36
20.....	52
24.....	62
27.....	70
28.....	72
30.....	77.5
32.....	82.5
36.....	92.5
40.....	102
42.....	107
44.....	112
Alkaline—	
40.....	72
50.....	90
60.....	108
62.....	112

It is proposed to adopt as standards 30, 40 and 42 cell acid, and 40, 60 and 62 cell alkaline batteries, thus rendering it possible to use only two charging voltages with a small amount of regulating resistance. This plan in general is looked upon with favor by electrical experts who have studied the automobile problem in all its details, though sundry modifications to it have been suggested.

Thus, in the opinion of Bruce Ford, of the Electric Storage Battery Co., standardization should begin with the battery plates, rather than with the cells, which are composed of an assemblage of plates. In standardization work, as he calls to mind, the order of procedure should be to regulate first parts "which have to be obtained most frequently in the open market, and, for that reason those parts which wear out."

Thus, if a blind attempt were made to standardize voltages regardless of other considerations, the tendency would be to develop a wide variation in the sizes of cells and also in the plates. Three or four standards could be developed without much difficulty, it is thought, however, and particularly, where the charging voltages of the acid and alkaline batteries come pretty

close together, the plan of altering the former to suit the demands of the latter has been favored in the interests of general economy.

One danger that all standardization work involves has been applied to this particular case by J. D. Forrer, of the Westinghouse Electric Co., who foresees the danger of restricting future practice through the inauguration of too rigid standards, even though they may conform absolutely to present requirements. Thus, a minimum equipment of 30 cells might prove a serious handicap to the electric vehicle builder of the future, were it desired to make a more extensive development of the light vehicle than has yet been done. Another point which this authority considers important is that the builder of the present day should be left free to exercise considerable discretion in fitting his product with large or small battery equipments in order to meet the requirements of varied service conditions.

Considering the several arguments which have been advanced, it is believed that certain styles of battery plate could be developed along standard lines for limited voltages and adapted to pleasure and commercial duty, respectively. Similarly motors could be designed to run on batteries of the standard form, although, owing to the different discharge rates of the two principal styles of battery, a distinction must be maintained. Thus, for batteries which could be charged at 110 volts average current, either 60 or 85 volt motors would be required.

In the meantime the opinion is held in some quarters that the electric automobile manufacturers are not quite ready for a general movement toward standardization. One man has even gone so far as to express the idea that the central station people—who are recognized as most vitally interested in the simplifying of the charging problem—should wait until the manufacturers have sold more cars, and consequently are in a position better to withstand the overhead expense of installing new standards.

But in one phase of the situation there seems to be no difference of opinion. That is in the requirement for standardizing the labor end of the field. Expert battery attendants and mechanics who understand finer problems of electric vehicle adjustment and operation are more sadly needed today than ever before. As one man of wide experience has put it: "I have no doubt that the demand for the electric vehicle will outgrow the supply of competent men to look after it. Therefore if we do not have the men now that are available, we can do nothing better than to take steps to develop them."

Oldfield to Open Drink Dispensary.

Barney Oldfield is to become a saloon-keeper. With \$50,000 which someone says

he received from the alleged sale of his racing cars to E. A. Moross, he is to open a drink dispensary in Los Angeles, where his good friend and recent traveling companion, Jim Jeffries, runs an establishment of the sort. Where Moross obtained the \$50,000 for the purchase of Oldfield's three second-hand cars is not stated. Oldfield is credited with saying that it came from the "racing trust," as he lightly terms the American Automobile Association, which outlawed him and his cars, and some people who ought to know better have swallowed the yarn and repeated the language with less even than a pinch of salt. Oldfield intimates, however, that he may find time in the future occasionally to steal away from the mixing of drinks long enough to drive a racing car, and who knows but what Moross would be generous enough to loan him one of his old flyers?

Case Team's Suspension is Shortened.

The punishment of the J. I. Case Threshing Machine Co., of Racine, Wis., and Lewis Strang, manager of the Case racing team, who were suspended by the A. A. A. for one year for the failure of the team to appear at the New Orleans racemeet last month, after having been entered and advertised, has been reduced to 30 days and will expire at the close of the 26th inst. The illness of Strang and the inability of the Case company to prepare the cars in time were the softening reasons that were brought to bear, but the A. A. A. contest board declares that they are not sufficient to excuse the failure to notify the New Orleans club and thereby to have permitted it to make public the reason for the non-appearance of the team.

Los Angeles Cards First 24 Hours Race.

The first of this year's 24 hours races is slated to occur April 8-9 on the Los Angeles motordrome. It will be a Class E special event open to any car under the piston displacements of Class C. Trophies emblematic of 24 hours' championships in piston displacement divisions will be given to winners in the following divisions provided there are at least two starters: 161-230, 231-300, 301-450, 451-600 and 601-750 cubic inches displacement. The first prize will be the Los Angeles motordrome trophy and 15 per cent. of the gross gate receipts. Second and third prizes will be 6 and 4 per cent. of the gross gate receipts, respectively.

Oakland Opening Once More Postponed.

Originally scheduled for the 28th and 29th of January, the opening racemeet of the Oakland (Cal.) motordrome has suffered its regular postponement, the last dates set, March 4th and 5th, having been abandoned. After having engineered five such set-backs, the promoters finally decided to leave the opening dates unfixed for the time being.

Factors That Enter Into Motor Truck Economies

That the butcher, the baker and the candlestick maker, as figuratively representing the small retail tradesmen, one and all are regarding the motor delivery wagon with increasing interest and with a growing disposition to enlist its services no longer is a matter of news, but the spectacle of an association of wholesalers sitting down to a serious consideration of the motor vehicle problem is still sufficiently novel to be noteworthy. The annual meeting of the Pennsylvania, New Jersey and Delaware Wholesale Grocers' Association, which was held at Easton, Pa., last week, was an occasion of the sort. Automobile delivery was the principal topic for discussion and the position of the retailer with respect to the automobile, quite as much as that of the wholesaler, was defined in an unusually logical and enlightening manner by E. L. Howland, who is the automobile editor of the New York Journal of Commerce.

"When merchandising was in its infancy," he said, "delivery played but little part in the life of the merchant. Buyers paid their money and took their goods f. o. b. seller's point. But as competition progressed, demanding higher and higher quality of service on the part of merchants, it became necessary for the seller to lay down his goods at the buyer's door.

"Delivery and kindred forms of service have saddled upon the merchant far more of a burden than he imagines. . . . Horse-borne vehicles supplanted the ox-cart because they were better and the automobile truck is bound to supplant the horse because it places in the hands of the merchant an opportunity for higher quality of service to his customers. After all is said and done, service is the largest ingredient in that much-misunderstood term competition, and the merchant able to give the best service is the most successful merchant.

"I do not contend that, as an open flat proposition, the power wagon is in all cases cheaper than the horse drawn truck. In some forms of haulage the horse can still hold his own, but his field is daily becoming narrowed. The service which competition demands today is in many cases of an entirely new sort, quite practical with the automobile truck, but absolutely impossible with the horse.

"As city folks move to the suburbs, retailers are bound to follow them, and as the retailers expand their field the jobber must hold his trade or see it fade away from him. Any city jobber knows that he is today making deliveries twice as far from his warehouse as he did ten or fifteen

years ago, and he must add more mileage each succeeding year.

"I know of a New York house which has been making deliveries with its own trucks 35 miles from its store all winter long. It would have been utterly unable to hold that trade had those deliveries depended on horses, or to compete had it been turned over to express companies. I know a house in New York doing a large business in Coney Island among customers who buy in small quantities and demand frequent service in the summer months. Only by a light motor wagon making three and even four round trips a day between Manhattan and the Island is this house able to hold that trade, while competitors with horse vehicles are totally unable to meet the service. Most houses during times of snow drifted streets are obliged to double the number of horses to each truck, and even then reduce the loads. Others have been forced to hire extra teams in order to get out their goods. Experience shows that snow drifts make but little difference to the running of high grade motor trucks, and in competition the owner of power trucks wins trade from his less progressive competitor and holds it, as he never could with the old forms of service.

"I mention these instances only to show that as an element of development and growth in the competitive field the power truck offers immense opportunities. There are available many comparisons which tend to prove that they also accomplish economies in unit costs, but I do not claim that they always apply. For instance, I am told by students of the question that for short trips where long waiting, loading or unloading are involved, the average horse-truck is somewhat cheaper, inasmuch as the idle investment is less, and resting horses are not to be compared with motors in motion when the truck is not. But, on the other hand, horses have limits of endurance, while motors have not, and hauls which are absolutely impossible for horses are quite practicable for motors. Besides, dead horses cannot be repaired, while broken motors can.

"It is almost impossible to arrive at unvarying, intelligent comparisons of economies, owing to the intricate elements which enter into any truly fair comparison. First of all, horse transportation has seldom been figured with the nicety that is exacted in a study of the truck. The merchant knows that a double team costs him so much per day and will do about so much work. But ask him what it costs per package, or per ton-mile, or per pack-

age-hour, or ton-hour, or cost running as against cost standing still, and he has no data for comparison. The kind of service also varies with much complexity. The cost of an hour in motion, of an hour at rest; an hour loading or an hour traveling; traveling over rough-paved or smooth-paved streets; over car tracks that ruin tires, or on those which really economize by reducing vibration when used by trucks; mileage empty and mileage loaded—all these are so complex as to make it difficult to compare costs.

"The forms of service required by one business are entirely different from those of another. The coal wagon goes out loaded heavily, but comes back absolutely empty. Its needs are flexible and varied. The beer wagon goes out loaded heavily with a comparatively small bulk of barrels and comes back piled high with light weight of empties. The grocery jobber's truck goes out loaded heavily and need not move especially fast, but when it returns empty on waste time, speed is an element. The department store truck economy involves quick delivery of many light parcels; weight being of hardly any consequence. The relation of delay in loading and unloading, as compared with speed of actual transit, is a very important consideration for the truck buyer. . . . Then there are the different types of power—gasolene and electric—each possessing advantages and each disadvantages, in accordance with the character of the service to be exacted of it. Above all, is the great element of the man on the box. An intelligent chauffeur will get better results from a poor car, both in upkeep and daily performance, than a careless or ignorant driver with the best car made. Picking the road, judgment in the use of power and brakes, generalship in a sense, are controlling elements in truck economy and depend almost wholly on the man in charge of the car. . . .

"One well known jobbing grocer assures me that his one large truck does the work of three double teams at about the cost of two, even though this jobber charges to his truck an unusually heavy load of expense. Furthermore it performs service for him that no truck could and which ought not to be measured in dollars. I have the word of a well known engineer in the truck field that the average horse cartage will amount to 18 cents per ton mile, while the average efficient gasolene truck will do the same service for from six to ten cents. A jobbing grocer whom you all know, a man with ample experience, assures me that at

the same cost, the efficiency of the truck is 50 per cent. greater than that of horses.

"On a recent test covering three months a small truck made a record of 25 deliveries, averaging 426 pounds each per day at the rate of one delivery in 17 minutes and at a cost of two cents per mile. In a test against a horse, a similar light truck made 418 deliveries, covering 560 miles, in 114 hours at a total cost of \$8.76, or two cents per delivery, while a horse wagon of similar capacity made only 110 miles in 133 hours, with 132 deliveries at a cost of \$7.49, or six cents per delivery.

"R. H. Macy & Co. report that figures based on their operating cost for the whole year 1909 showed a cost per package of 6½ cents by truck and of 8½ cents by wagon. This house has established a relay system of distribution, with heavy trucks running to certain outlying depots and lighter ones radiating from there. These heavy trucks made an average of 40 miles per day in 1909 and close to 60 miles per day in 1910 (due to improvements in the cars and the system). They report the load-mile cost to have been 29¼ cents, overhead charges included; each truck with four men, displacing 14 horses and eight men. The light delivery wagons showed a mileage cost of 59/10 cents.

"Any intelligent and economical use of a power truck ought to rest on reasonable system. Concerns having much delivery usually study system and apportion to horses and trucks—big trucks and light delivery wagons—that portion of the work for which each is best adapted. Otherwise, the power truck might easily become a source of expense rather than economy. The most striking successes I know of rest on intelligent recognition of this, in which the heavy loads and long hauls are given to the trucks and the short hauls and long waiting at loading platforms and delivery points to less expensive equipment.

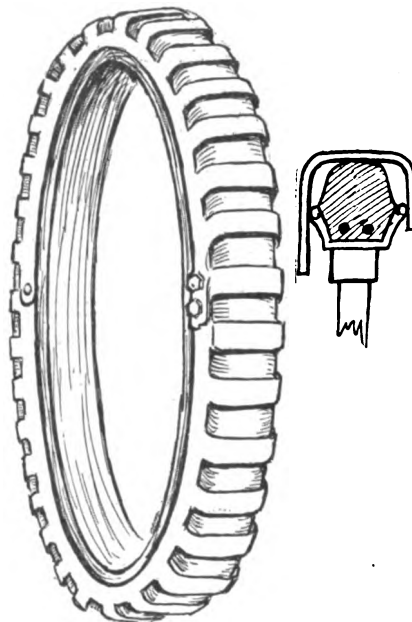
"Another large New York department store, on its experiences with ten electric wagons, reported 29 8-10 miles per day for each vehicle at a cost of 2 2-10 cents per mile. A large wholesale house which had 53 double horse trucks, involving the use of 212 horses, 53 drivers and 53 helpers, found the investment to aggregate \$68,631.05 and the annual operating expenses \$149,674.05. It replaced them with 40 electric trucks at an initial investment of \$140,570.80 and an operating expense of only \$113,902.12, a saving of not far from \$36,000 a year in operating expenses, which would, in less than two years, more than compensate for the increased original cost of installation, to say nothing of the increased radius of action and convenience of service.

"I might furnish you such figures by the yard to prove that scientific investigators can show immense economies by using motor trucks in place of horses. It seems to me, however, that the far-sighted mer-

chant will prefer to discern in the new transportation agency something more than dollars saved in the first instance. Rather he will see in it opportunity for economy, coupled with increased service. The greater degree of service he can accomplish with his present too limited margin of profit—which I think none of you will dispute—the better, more progressive and successful merchant he will become."

New Non-Skid Grip for Solids.

As a solution of the traction and skidding difficulties with which commercial vehicles are beset, a new form of steel grip for solid



GAYLOR SOLID TIRE GRIP

tires has been invented by Leonard B. Gaylor, of Stamford, Conn., who formerly was connected with the Waltham Manufacturing Co., but more recently has become known as the originator of a number of appliances, among them an engine "trouble-finder" of the stethoscope variety. The new non-skid takes the form of a two-part ring with a large number of narrow straps which are bent over the tread surface to form the grips. The two parts of the grip are hinged together at one connecting point, bolted at the other, and, if desired, may be made adjustable at that point.

The illustration shows how the grip engages the tire and rim, its advantages being, of course, that it provides a large number of gripping surfaces without in the least destroying the resilience of the tire, since the entire ring, as a unit, is free to yield with the tread portion of the tire, while any bending strains that may be imposed on it, as when bridging obstructions in the road, are taken care of by pressure against the tire itself. As the ends of the strips on the back side are unattached, in the form of grip illustrated, the appliance is adjustable to wheels and tires of different size and also possesses flexibility.

In forming the device, it is first blanked out of sheet metal to form a serrated plate, the latter afterward being bent around into semi-circular form and its ends offset to provide for attachment to the other half-ring. The ends of the serrations are then bent over to conform to the size and shape of the tire. For large wheels and those which are equipped with dual tires the grip may be constructed with a flange on the inner, as well as the outer, side of the wheel. It also is possible to construct the grips with separate rings and tread strips riveted in place instead of forged integrally.

For Telling Tales on Tires.

As a gentle reminder to motorists that it pays to keep careful record of the individual performance of their tires, the Shawmut Tire Co., Boston, Mass., just has issued a neat little vest-pocket tire-log in leather-bound form wherein all necessary data can be set down in proper form and order. There are columns on its pages for preserving the dates of applying and removing each tire, the speedometer readings at the times of application and removal, and a space for designating the wheel to which it is applied. Properly carried out, the record will show the relative performance of various sorts of equipment as well as indicating a number of useful matters concerning the condition of the car itself. Incidentally, the booklet contains a printed record of the performance of a Shawmut tire which is said to be still in use on a taxicab in Boston, and which at the time the booklet went to press had run no less than 7,154 miles.

Huston's Idea of a Fair Exchange.

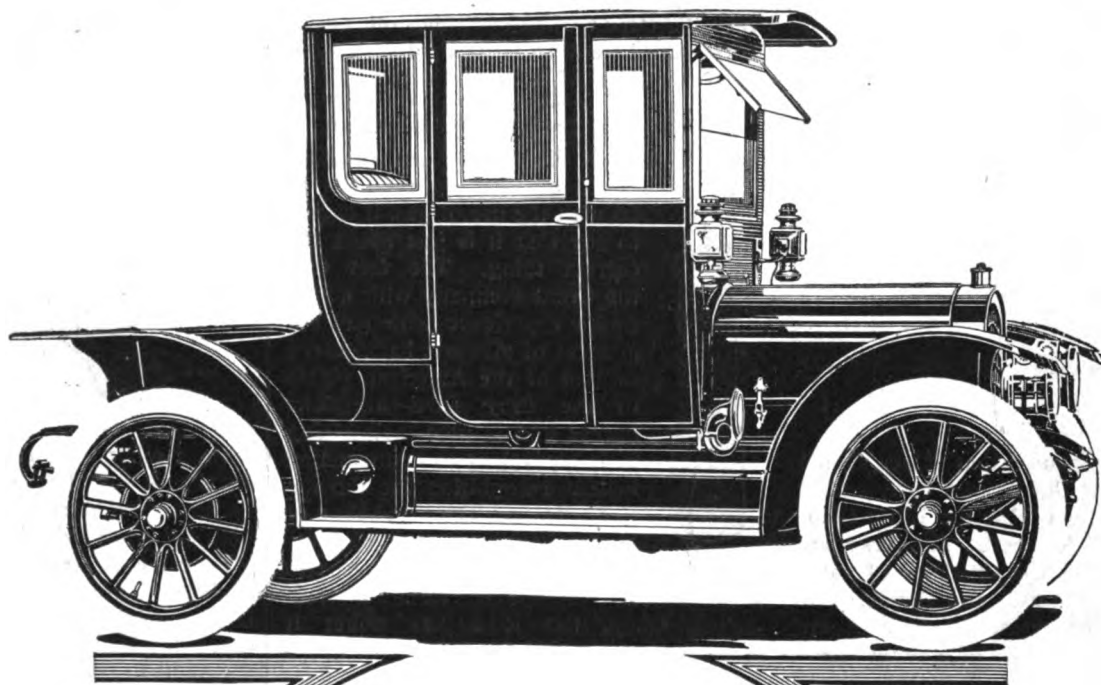
Washingtonians glancing over their morning paper last Sunday did not believe their eyes when they saw the following advertisement in the "Want" columns. "For Exchange—One meerschaum pipe, two centuries old; to exchange for good automobile." When James M. Huston got through with the first dozen reporters, and alienists, and others anxious to see the man who put the ad into the paper, he was a thoroughly angry individual. "I don't see what people want of me, anyway," he said; "here I have a meerschaum pipe that I paid \$100 for, about 50 years ago, and it's easily worth \$1,000 today. Of course I haven't exchanged it yet, but maybe someone would rather smoke a genuine meerschaum 200 years old than ride in a car. I'm sick of smoking it."

Wants Lamps for All in New York.

A bill to require that lights be displayed on all horse-drawn vehicles is pending in the New York legislature. It appears to stand small prospect of passage, but efforts are being made by the New York State Automobile Association to have it reported favorably.

Rambler

Closed Cars



Rambler
Sixty-three
Coupe

FOR the convenience and comfort of the doctor, business man or woman who has necessary outdoor errands in bad weather, and who desires to dispense with the services of a chauffeur, the Rambler Inside-Drive Coupe is especially suited. Its distinctive appearance, warmth and comfort, fine interior finish, and the advantage of driving slowly on high gear in crowded traffic adapt it for theater use, afternoon calls and shopping. Its range of usefulness is greater than that of the ordinary inside-drive car, as the seat is so wide it will comfortably accommodate three, and a drop-seat facing the other will accommodate a fourth passenger.

A telephone message to the nearest Rambler representative will bring this closed car to your door for inspection. A postal will bring you the closed car book.

The Thomas B. Jeffery Company
Main Office and Factory, Kenosha, Wisconsin
Branches: Boston, Chicago, Milwaukee,
Cleveland, San Francisco, New York.

Tool That Simplifies Valve Removal.

For the purpose of quickly and properly removing valves, the Standard Valve Lifter Co., of 1597 Broadway, New York, has brought out a compact, strong and adjustable tool styled the Little Giant valve lifter, which is shown in the accompanying illustration. The reason for the uneven running of many motors is due to the valves sticking in their guides, this condition undoubtedly resulting in the majority of cases through the careless removal of valves by the antiquated method embraced in the use of screw drivers, or other improvised tools, which are employed as levers to compress the valve springs. As the damage to the stems often is almost imperceptible, and for this reason is hard



to remedy, it is essential that valves should be removed with the utmost care, and it was with this in view that the Little Giant valve lifter was designed. The jaws are designed to fit any size or shape of valve spring collar or push rod guide. As the illustration indicates, the handles are sufficiently long to allow of a good leverage being obtained, and are provided with a ring lock, which, being fastened after the spring has been compressed, leaves the operator's hands free for the manipulation of the collar key.

Switches that May Cause Short Circuits.

Although not so common an occurrence in the newer types of ignition systems, short circuits are still an occasional source of trouble to motorists. It is obvious that, as an electric current passes along the path of least resistance, any short or auxiliary path in the circuit will lead the current astray, thus destroying or materially weakening the intensity of the spark at the plug. A short circuit is nothing more or less than a "short path," and its presence will tend to interrupt the current, as the current must overcome considerable resistance both in the winding of the coil and in igniting the compressed charge in the cylinder, and the current tends to follow a path of least resistance. In either low or high-tension circuit, the shorts have about the same symptoms and are productive of practically the same results—weak sparks having insufficient heat to ignite the charge. However, leakage may be but a partial short circuit, having just enough freedom to draw from the strength of the current and weaken the pressure without causing a complete failure of the ignition.

In many instances short circuits may be traced to the switch, where often the terminals are placed so closely together that

the binding nuts are hardly separated more than 1-16 of an inch. Nothing more than a loose strand of the wire end would be necessary to span the gap and produce a short circuit. If the posts are very near together, the wires should be closely cut off and the screws insulated by winding them with some tape. A short circuit at the switch generally makes a broken circuit, but, in a few cases, the switch may fail to break the circuit when switching off. Other shorts may be due to insufficient or broken down insulation of cables or wet wiring.

Simplified Burner that Saves Lamps.

When the W. M. Crane Co., of New York, takes hold of anything that has to do with the use of gas, it is safe to say that it is just about the correct thing. The fact that the Crane company with a lifetime's experience with gas appliances of all sorts has secured control of the American rights to the Bray Roni acetylene burner and is now maintaining it, is equivalent to commanding instant recognition for the device. Though the usual type of burner has two arms or prongs



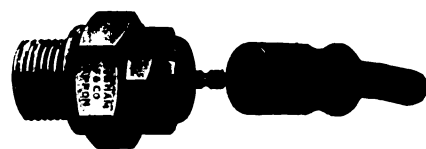
through which the gas is led in two jets, which, impinging, form a fan-shaped flame, the Roni has none; it is merely a straight pillar with a single gas orifice but one that provides the flat fan-shaped flame that is so desirable. Having but one gas-way, for a given consumption of gas, the orifice must be twice the size of those in which two are used, and the danger of clogging, therefore, is reduced one-half. When one of the jets in the double type of burner becomes clogged the other receives double pressure and the resulting elongated flame often is the cause of broken glasses in headlights; breakage also is caused by a temporary increase in the gas pressure causing the two jets to pass each other. With the Roni burner such breakages are not possible as its single orifice directs the gas vertically where the heat can do no harm. Owing to the construction of the tip, which is made of an enamel on which acetylene has no effect, all the flame is above the burner and carbonization is practically impossible, though if carbon should form it could not reach the vital part of the burner—the orifice—and easily could be removed with an ordinary tooth-brush. The Roni burner is of standard proportions and may be applied to practically any lamp.

To Clean Plugs Without Stopping Engine.

On spark plugs which have a switch arm it is an easy matter to break the contact so that the spark will jump the gap and become intensified. With this arrangement plugs may be cleaned with celerity as the intensified spark will in most cases burn away the foul accumulation.

Snap-On Spark Plug of New Type.

One of the latest ignition devices to be placed on the market is a combination spark plug and high tension wire terminal, which is manufactured in Cleveland, O., by the Bingham Mfg. Co., and which is styled the "Snappon" spark plug. The plug itself differs but slightly from others in which the positive electrode is placed in the center of the shell, the latter forming the negative electrode. In the "Snappon" plug the negative electrode has three points, but the chief feature of the device is embodied in the other end of the plug, namely, that part of it which protrudes above the cylinder when the plug is screwed into position. In appearance the plug is very compact and simple, there being no



upright pillar of porcelain or mica such as usually is found in other types of plugs. In fact, the porcelain ends almost flush with the top of the metal part of the plug, the center electrode alone protruding for a short distance above the porcelain. The high-tension wire terminal consists of an outer insulating sleeve and a brass plug into which the wire is fastened by means of a small set screw, and which is in turn screwed into the insulating sleeve, becoming a part of it. The whole forms an insulated terminal which slips over the end of the center electrode and is held in place by two small steel balls in the cap, which are pressed into a groove in the electrode by means of two springs. Thus the terminal, with the wire attached, is simply slipped off the electrode when it becomes necessary to remove the plug. When the terminal is in position it thoroughly protects the porcelain of the plug, and the whole is water and short circuit proof.

To Stop Leaks in Tire Valves.

Tire valve trouble is very often caused by the cutting away of small particles of the rubber washer which is fitted into the top of the valve cap, and the falling of these particles into the valve stem. When in the stem they are likely to work between the seat and the valve and make the latter work improperly. In order to stop leaks caused in this way, cut small leather disks of just the right size to fit into the cap so that they will cover the rubber washer. These disks not only allow the rubber to be used as a cushion but prevent it from injury when the cap is screwed down. Care must be taken to see that the leather disk does not depress the plunger and cause a leak that may prove more mystifying than the original trouble.

RECENT PATENTS.

976,834. Speed-Regulating Device for Automobiles and the Like. Hippolyt Saurer, Arbou, Switzerland. Filed Sept. 8, 1909. Serial No. 516,712.

1. In an auto-truck driving mechanism, the combination with the motor, a governor carried by said motor, a distributing valve controlled by said governor a gear changing apparatus, and a flexible connection between said governor-controlled valve and said gear changing apparatus whereby a constant speed of the vehicle is maintained under various gears by automatic regulation of said distributing valve.

976,839. Vehicle Wheel. Selden L. Simpson, Washington, D. C., assignor to The Simpson Specialties Company, Cleveland, Ohio, a Corporation of Ohio. Filed June 7, 1909. Serial No. 500,943.

A vehicle wheel having a grooved rim with a central circumferential portion which is convexed, a hollow circular outlined member having its opposite edges outwardly bent and in the same plane, fastening means engaging the edges of said member to the inner surface of the grooved portion of the rim upon either side of the central convexed part, a hub, series of spokes having their inner ends secured to said hub, the outer ends of the spokes engaging the inner periphery of said member and having its opposite edges flush with the opposite sides of the member, and means for fastening the latter and said spokes together.

976,881. Carburetter. Barry Ivor, Chicago, Ill. Filed Jan. 13, 1910. Serial No. 537,872.

1. A carburetter consisting of a main casing having a mixing chamber at one end thereof, means at its other end to admit air thereto, a reservoir within the casing, a pump within the reservoir having a valve-controlled in-take port communicating therewith and a valve-controlled discharge port communicating with the mixing chamber, and a spring-actuated valve connected to the plunger of the pump to open and close one end of the main casing.

976,911. Carburetter. John N. Petersen and William F. Pettit, New Orleans, La. Filed Nov. 14, 1908. Serial No. 462,583.

1. A carburetter comprising a valve casing having a substantially straight air passage therethrough, means for supplying gasoline to said valve casing, means for supplying air thereto, a plurality of longitudinal flanges in said valve casing, means for controlling the supply of air and gasoline to said valve casing, a mixture valve mounted to slide in said valve casing and having its periphery in contact with the inner faces of said longitudinal flanges, and two valve seats to which the gasoline supply and the air supply respectively lead, the said seats being arranged to be simultaneously engaged by said mixture valve, to check the flow of air and gasoline.

977,007. Gas Engine Starting Device. William A. Hansen, San Francisco, Cal. Filed July 3, 1909. Serial No. 505,906.

1. The combination with an internal combustion engine, and a main carburetter, of a supplemental vaporizer, a hydrocarbon supply device between the main carburetter and said vaporizer, and a controlling needle-valve, a chamber, means for admitting air under pressure into said chamber, a pipe conducting gasoline through said chamber, said chamber having an an-

nular exterior passage for the air, and a distributing chamber into which the mixture is admitted and from which it is delivered to the cylinders.

977,044. Carburetter. Benjamin Rebouh, Denain, France, assignor to Societe Francaise de Constructions Mecaniques (Anciens Etablissements Cail, Denain, France. Filed April 26, 1910. Serial No. 557,765.

1. A carburetter comprising in combination: a constant level tank, a sprayer having orifices situated at various levels, a tube sliding over the sprayer and adapted to cover more or less the orifices in the latter, an expansible annular part having a constricted passage for the air approximately on the level of the orifice in the sprayer, and having its lower end secured to the carburetter body, and its upper end connected to the tube sliding over the sprayer, and means for rotating the upper end of said part, substantially as described and for the purpose set forth.

977,066. Carburetter. Pehr Martin Blom, Toledo, Ohio. Filed Jan. 29, 1909. Serial No. 475,003.

1. In a carburetter, a vaporizing chamber, a frusto-conical mixing chamber located within said vaporizing chamber and having its small end closed and its side wall provided with a plurality of perforations to open communication between said chambers, and channels provided through the vaporizing chamber and around the outer wall thereof for the passage of the exhaust from an engine.

977,229. Fuel Mixer. Alfred Schmidt, Lake Hopatcong, N. J. Filed Feb. 18, 1910. Serial No. 544,595.

1. A fan provided with blades and webs extending in the spaces between the blades, said webs connecting the edges of adjacent blades, said webs having openings.

977,334. Internal Combustion Engine. John Edward Sears, Jr., Newcastle-upon-Tyne, England. Filed Dec. 28, 1909. Serial No. 535,285.

1. In an internal combustion engine the combination of a working cylinder provided with inlet and exhaust ports, two pistons working in said cylinder and a cylindrical valve sleeve between said pistons and the cylinder wall.

977,351. Power Tire Pump. Harold D. Waterhouse, Wollaston, Mass. Filed June 27, 1910. Serial No. 569,220.

1. In a power tire pump, the combination of a pump cylinder, a floating piston therein, a port at one end of said cylinder adapted to be connected to the chamber of a motor cylinder, a valved by-pass communicating with said port and said cylinder, a port at the other end of said pump cylinder adapted to be connected to the tire to be inflated, and a valved port adapted to admit air into said pump cylinder, substantially as described.

The Bush Radiator
THE BUSH MANUFACTURING CO.
HARTFORD, CONN.



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Says:**

"Of course I carry **Weed Anti-Skid Chains** on my automobile—always. They're as necessary as Gasoline. A chain on each rear wheel is **Car and Passenger Insurance** and if you want to know what **real steering steadiness** means, put them on your front wheels too."

Weed Anti-Skid Chains

(With the Creeping Grip)

give confidence. You know you can get there when you carry **Weed Chains**—get out of any rut—climb any hill—swing any corner. Skidding with Weed Chains is practically impossible and when you start for a place, you know you will finish.

No Trouble to Put On

—you don't need a jack—and the little bundles that they make in their canvas bags, take scarcely any room. They were the beginning; and they are now the only perfect anti-skid device. They save tires and, because they're reversible, they save themselves—two chains in one.

Tire Preservation

means money and worry saved. **Weed Anti-Skid Chains** because of the "Creeping Grip" cannot injure tires; they actually preserve them. They are made in sizes to fit every tire so be sure to get the right size. Too heavy a link will ruin a small tire. Every reputable dealer carries repair parts which are interchangeable on any or every Weed Chain.



The name **Weed** on every connecting hook. Cross Chains all brass plated; every link electrically welded and highly tempered; almost as smooth as glass and as hard as a diamond without being brittle.

WEED CHAIN TIRE GRIP CO.
28 Moore Street, :: :: New York City

977,377. Triple Auxiliary Air Valve for Carburetters. Vincent H. Donnelly, Harry B. Koessler and Joseph T. Weinzierl, New Kensington, Pa. Filed Dec. 13, 1909. Serial No. 532,923.

1. In a carburetter, the combination with a carburetter casing, of an auxiliary air valve mechanism carried thereby, said mechanism comprising a spider carried by said casing, a valve slidably mounted in said spider and adapted to seat thereon, a valve slidably mounted in the last mentioned valve and adapted to seat thereon, a valve slidably mounted in the last mentioned valve and adapted to seat thereon, and adjustable means supported by said valves and for maintaining said valves in their seats.

977,392. Spring Suspension for Vehicles. Prosper Morren, Brussels, Belgium. Filed Jan. 4, 1910. Serial No. 536,396.

1. In a suspension device for vehicles

and the like, a supporting spring means fastened at one end to the vehicle frame and free at the other end, together with an inclined bearing surface rigid with the vehicle body over which said free end travels when the spring is subjected to stress, substantially as described.

977,458. Roller Bearing Having Grooved Rolls and Tension Band. Charles S. Lockwood, Newark, N. J., assignor to Hyatt Roller Bearing Company, Harrison, N. J., a Corporation of New Jersey. Filed June 2, 1910. Serial No. 564,540.

1. In a roller bearing, the combination, with a conical hub having an inwardly facing shoulder near its smaller end, of a series of tapering rolls fitted to such hub with their smaller ends against such shoulder and having each a shallow groove about the middle of its length, and an undivided annular flexible tension band fitted to such groove and arranged and operated to hold the rolls against the said shoulder and to

elastically resist certain expansive movements of the rolls upon the hub, and positively prevent the expansion of the rolls beyond a certain limit.

977,586. Fastening Means for Vehicle Tires. Percy B. Bosworth, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio, a Corporation of West Virginia. Filed Nov. 5, 1906. Serial No. 342,110.

The combination with a rim having an annular groove in one edge portion thereof, and a filler-ring mounted on said rim, of a circumferentially expansible and contractible locking-ring engaging the outer side of said filler-ring throughout substantially the full width of the latter, said locking-ring having a bead seated in said groove and a square annular shoulder resting against the portion of said rim outside of said groove, and pins connecting said locking-ring and filler-ring, substantially as described.

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THERE are a great many blowing their own horns and telling what they can do—When we say, "We produce results," we are only quoting what others have said of our work. We know the people who are in the market for automobiles and accessories but we do not handle either. Our work is to furnish guaranteed lists of prospective investors, people who are in the market to buy, people who are waiting to receive your prospectus, facsimile letter, leaflet, catalogue, etc. Our specialty is to not only furnish the lists, but compile, address, wrap and mail your printed matter.

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It is not difficult to find owners who have been compelled to discard two wind shields during a single season. There are very few owners who can boast that one shield survived one season.

That is because ordinary wind shields are manufactured as a means for great profit and not for good service.

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\$22.50 to \$40.00, according to style and size.

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King of the Speedway, Monarch of the Road.

Repeated racing victories, extending throughout the season of 1910 and beginning with the first races of 1911 demonstrate the absolute mechanical perfection of the famous "National 40" chassis.

68 firsts, 47 seconds, 37 thirds and 19 fourths on track, speedway, road and hill, won not alone by factory cars, piloted by factory drivers, but by individual cars driven by owners, is a record that no automobile in America or Europe can approach.

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*In justice to yourself make
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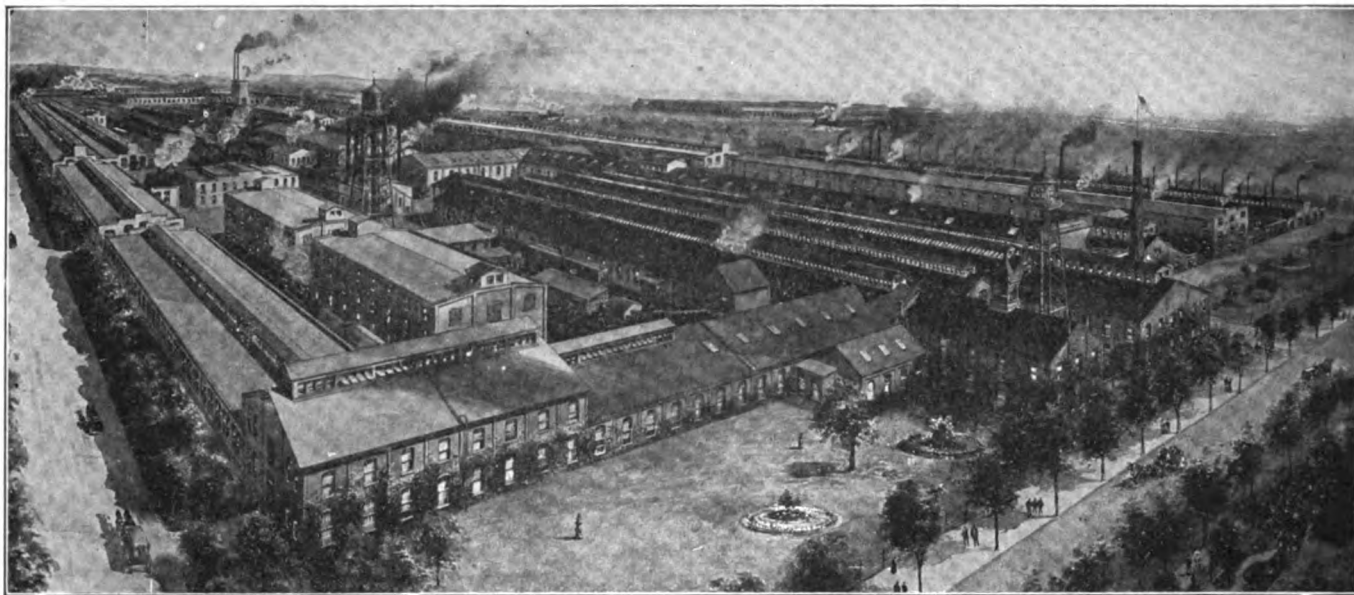
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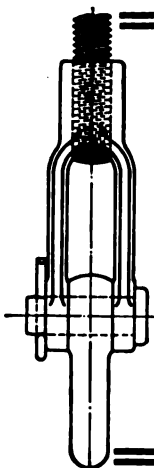
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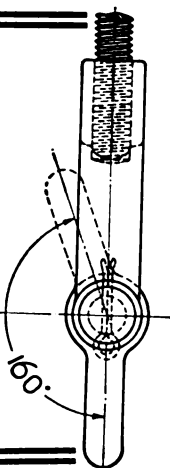


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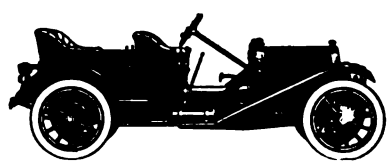


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3 sizes—1-ton, 2-ton and 3-ton

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SAVE YOUR TIRES



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PRICE \$1.50 ALL DEALERS or by mail on re-
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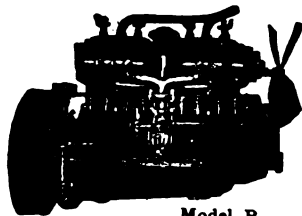
"APLCO" ELECTRIC LIGHTING SYSTEMS
FOR AUTOMOBILES,
MOTOR BOATS AND COUNTRY HOMES,
SEND FOR BULLETIN
APPLE ELECTRIC COMPANY
No. 18 N. Canal St., DAYTON, OHIO



**Perfection
Spring Company**
SPECIALISTS IN
**SPRING —
SUSPENSION**
HIGH GRADE ONLY
Cleveland, Ohio

Repair tire and casing cuts with the
Auto Eleck-Trick Vulcanizer
DURABLE — ECONOMICAL — EFFICIENT
Price with Repair Ma-
terial and Garage Kit, **\$15.00**
JAMES L. GIBNEY & BRO.
217 N. Broad St., PHILADELPHIA 240-52 W. 34th St., NEW YORK

"CONTINENTAL"



Model R.

This name
represents the
highest develop-
ment in the art of
motor building.

Our catalogs
will convince you.

20 to 60 H. P.

CONTINENTAL MOTOR MFG. CO.

Muskegon, Mich.

FACTORY REPRESENTATIVES

K. F. Peterson, 150 Michigan Ave., Chicago.
L. D. Bolton, 1810 Ford Bldg., Detroit.

Perfect Ignition Guaranteed
by using

**AUTO MARINE and
LEGNARD SPARK PLUGS**

For Sale Everywhere

LEGNARD BROS., Inc., 20 Genesee St., Waukegan, Ill.

Michelin

DEMOUNTABLE RIM

*The Original Type*

**Simplest
in Construction
Lightest in Weight
Easiest to Operate
Absolutely Secure
No Lugs
nor Security Bolts**

**MICHELIN TIRE CO.
Milltown, New Jersey**

Do You Know All You Ought to Know About COLUMBIA LOCK NUTS?



ORIGINAL

They are a distinct contribution to safe auto-
mobile construction.

Used with entire success by many of the leading
makers and most of the principal railroads.

We have an interesting booklet which is yours for the asking.



IMPROVED

COLUMBIA NUT AND BOLT CO., Inc., Bridgeport, Conn.

THE MOTOR WORLD PUBLISHING COMPANY
154 Nassau Street, New York

Enclosed find \$2.00 for which enter my subscription to

The Motor World

for one year, commencing with the issue of _____

Name _____

Address _____

AJAX TIRES

Guaranteed 5000 Miles

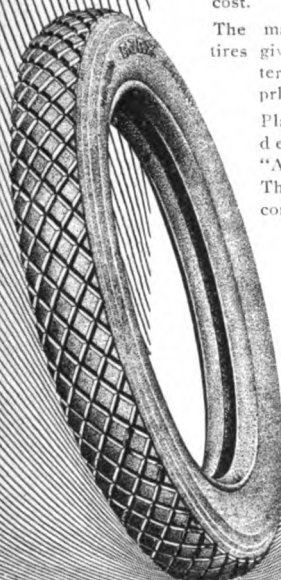
The man who uses "AJAX" tires gets longer and better tire service—and at two-thirds the former cost.

The man who sells "AJAX" tires gives his customers a better tire—and at no higher price.

Plain to see why so many dealers are handling "AJAX" tires this season. They satisfy BOTH the consumer and the dealer.

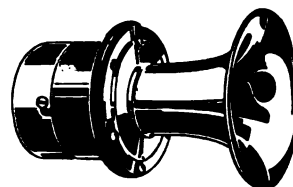
"Common Sense Lessons in the Care and Preservation of Tires" sent free to any address upon request.

AJAX-GRIEB RUBBER CO.
General Offices: 1796 Broadway, New York
Factories:
Trenton, N. J.
Branches
in Principal Cities



The MONOPLEX Electric Horn

\$12 and \$15 Complete



A true warning signal with a powerful tone that compels attention without giving offense.

ATWATER KENT MFG. WORKS

PHILADELPHIA, PA.

LOOK OUT

They are trying to fool you

So many of the automobile fellows are learning the advantage of the one-hole burner that other manufacturers are trying to imitate our RONI.

And they have succeeded in making burners that look just a little like the RONI and that's where they stop.

You want a burner that will last more than a week—you want one that will last you the whole season, in fact, several seasons.

So have a care when someone offers you a Moro or a Muro, or any burner that has a name like that. Don't be deceived.

Such burners are made only to sell, not to last

Ask for the RONI
Insist on the RONI

Let us put you wise. When you buy a burner,

SEE THAT SLOT



Then you will get a burner that will outlast your lamp.

FOR SALE BY ALL DEALERS
SOLE IMPORTERS

WILLIAM M. CRANE COMPANY
16-18-20 West 32d Street New York



NOYE MFG. COMPANY, Radiators
BARNES GEAR CO., Steering Gears
COOK SPRING COMPANY, Valve and Clutch Springs.

Sales Agents:

CENTAUR MOTOR CO.
510 Majestic Building DETROIT, MICH.

Casette

PROTECTOR OF INNER TUBES



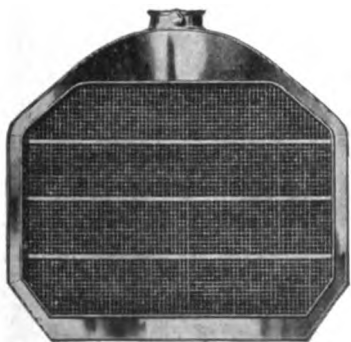
"CASETTE" is made of our special Gutta-Percha felt and is practically non-puncturable. Being loose at the inner tread is an important factor, as this allows a slight depression on the air tube at the point of contact with a sharp object. The "CASETTE" engages the object at this instant, and the wheel, turning, gives an oblique pressure on the sharp object and the air tube is protected. It is easily inserted and the low price commends it. *Everybody wants it.*

Weight of Casette 2½ lbs.

Why not represent us in your city?

GOODFELLOW TIRE CO. Woodward and East Grand Boulevard
DETROIT, MICHIGAN

LET US FIGURE WITH YOU ON

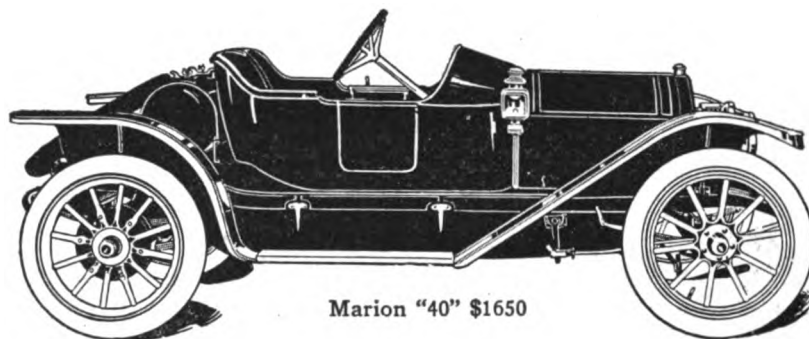


Our New Cellular

Radiators, Fenders, Pressed Steel Frames, Mufflers, Tanks, Hoods, Mechanical Oilers, Underpans, Brake Drums, Battery and Tool Boxes, Fans, Brass Moulding, Foot Rests, Robe Rails and Stampings of All Kinds.

Write for New Catalog

THE KINSEY MANUFACTURING COMPANY
Toledo, Ohio

Marion "40" \$1650

This Motor Car Will Live Up To Your Expectations

Really, the only drawback to the MARION has been the price. Business men have said, "That price is too low. People will discount your car because of that low price. It's a shame to put too low a price on such a great car." But we felt convinced after striving for years to get our cost down and being able to offer wonderful value, that the public would find out the facts—and we know now that we have been right.

Many an expert—from a competitor or European factory—has examined a MARION and has called for a demonstration. And experts have tested the motor, looked over the axles, the clutch and transmission, the lubrication, the steering arrangement, the frame, the springs and brakes. And without exception each one has expressed the opinion that the MARION gives the most for the money.

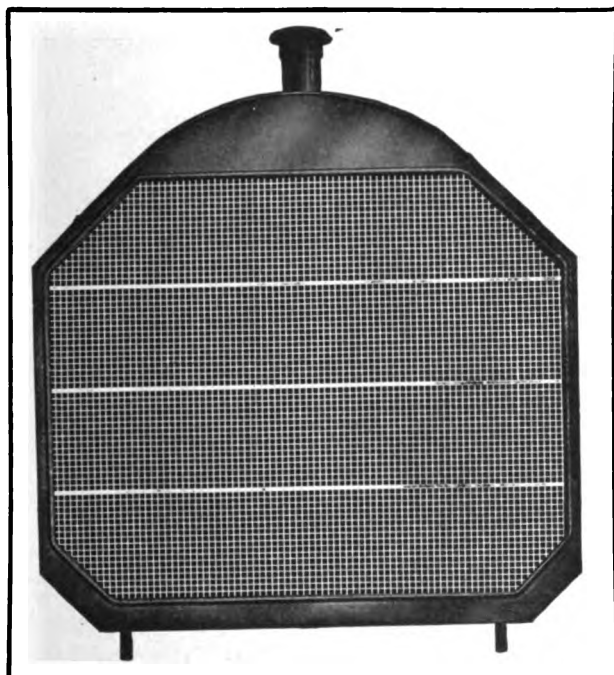
The MARION has been built judiciously—according to a hard-headed plan. We have weeded out everything unequal. We have chosen the best in every detail—irrespective of who made it—ourselves or some other concern. The MARION is a composition of perfections.

The MARION will give you the most for your money.

The MARIONS for 1911 at \$1150 to \$1700 are the cars that represent work of over a thousand men.

THE MARION SALES COMPANY, Indianapolis, Ind.

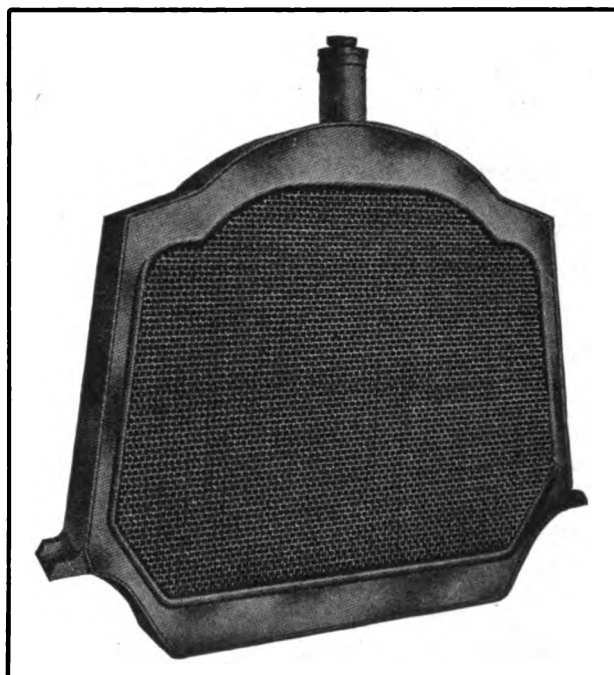
FEDDERS REAL SQUARE TUBE RADIATORS



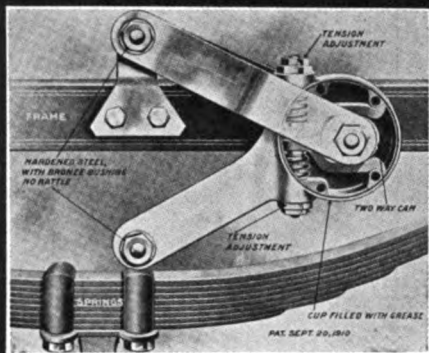
No square tube "effect" or imitation, but made of individual square tubes. Of course the real square tube is better, that's why the others imitate it in appearance. They can't make the real article at the price.

Furnished with tubes staggered or Mercedes finish, as shown on cuts.

See Fedders Radiators on such cars as Packard, Thomas, Pierce, Haynes, Matheson, National, etc.



FEDDERS MANUFACTURING WORKS, Buffalo, N. Y.



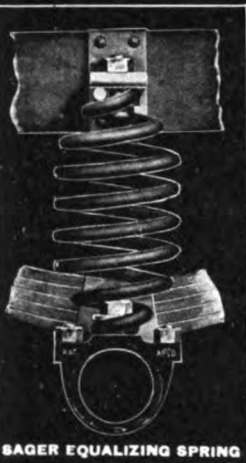
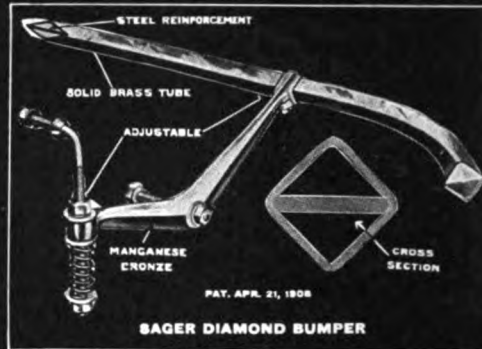
PEERLESS SHOCK ABSORBER

Peerless Shock Absorbers ABSORB SHOCKS

Not a friction device; therefore free in action. Its resistance is proportioned to its load. It is automatic. 60 DAYS FREE TRIAL will convince you.

Sager Diamond Bumper

Mechanically perfect, also artistic. Strongest made. Beyond reach of criticism. Practical and economical form of car insurance.



SAGER EQUALIZING SPRING

Sager Equalizing Springs

Have proven their worth through seven years of success. Endorsed by 18 manufacturers. 60 DAYS FREE TRIAL.

Spark-O-Lite

Teaches the error of the old way. It's a torch in the darkness. Operated from the seat while car is moving. Economical and easy to install.



SPARK-O-LITE

J. H. SAGER CO.
ROCHESTER, N. Y. 269 South Ave.

No Nuts—No Bolts—No Clamps No Junk—No Bunk

Adopted as standard equipment on *Benz* cars.

Owners of *Peerless*, *Packard*, *Pierce-Arrow*, *Lozler*, *Chalmers*, *Cadillac*, *Benz*, *Pope-Hartford* and many other makes of cars are ordering us to equip their individual cars with our Demountable Rims, and in a great many instances are specifying them when ordering new cars.



We manufacture our own device and *guarantee it for life* not to be affected by any weather conditions.

Nothing to lose in the sand, dirt or snow. Just mechanically comes off and is mechanically forced on again.

Designed originally as a demountable rim to do away with tire trouble, and for use especially on pleasure cars, it has since developed to the safest, simplest and quickest demountable ever produced.

I consider the Booth perfect, and use them exclusively on all my cars.

—BARNEY OLDFIELD.

It's a Booth! That's all you need to know about a demountable rim. All engineers or any convention of engineers invited to prove that our rim is not mechanically perfect.

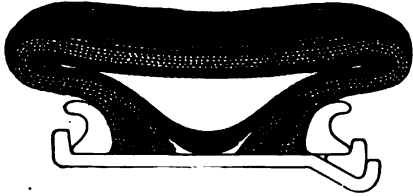
THE BOOTH DEMOUNTABLE RIM CO., Cleveland, Ohio

Goodyear No-Rim-Cut Tires Are 10% Oversize

That's another advantage in No-Rim-Cut construction.

That extra size—which we give without extra cost—adds 10 per cent to the carrying capacity.

It adds 25 per cent to the tire mileage.



No-Rim-Cut Tire

So the removable rim flanges are set to curve outward. The tire when deflated rests on the rounded edge, and rim-cutting is made impossible.

The flare of the tire begins right at the rim base. We can make the tire 10 per cent oversize and still fit the same rim. And we do it.

The 10 per cent oversize takes care of the extras the top, glass front, gas tank, gas lamps, extra tires, etc.—the things that overload most tires. With the average car it will save the owner 25 per cent of his tire bills.

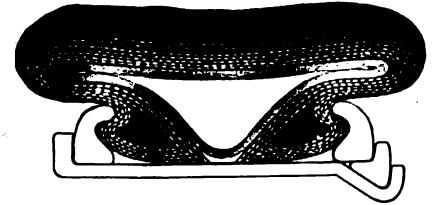
This shows how Goodyear No-Rim-Cut tires fit any standard rim for quick-detachable tires. Also demountable rims.

No-Rim-Cut tires have no hooks on the base. They do not need to be hooked to the rim. Not even tire bolts are needed.

This shows the clincher tire fitted on the same standard rim. This, until lately, has been almost the universal type of tire.

With this type the removable rim flanges must be set to curve inward—to grasp hold of the hooks in the tire. And those thin flanges digging into the tire cause all the ruin of rim-cutting.

Note how they also contract the tire. That's why No-Rim-Cut tires, fitting the same rim, can be made 10 per cent larger.



Ordinary Clincher Tire

The reason for all is our patented feature—126 braided piano wires vulcanized into the tire base. These contract under air pressure, so the tire is held to the rim by a pressure of 134 pounds to the inch.

The tire base is thus made unstretchable in the only practical way. Hooks and tire bolts are made unnecessary. Rim-cutting is made impossible, and the tires can be made oversize. The result, on the average, is to cut tire bills in two.

Last year these patented tires cost 20 per cent more than standard clincher tires. Yet our sales trebled in a single year. This year they cost nothing extra, and 85 per cent of our demand is for the No-Rim-Cut type. Sixty-four leading motor car makers have contracted for Goodyear No-Rim-Cut tires. And motorists this year will save millions of dollars because of this Goodyear invention.

Ask for our latest Tire Book.

GOOD YEAR

No-Rim-Cut Tires

With or Without Non-Skid Tread

THE GOODYEAR TIRE & RUBBER COMPANY, Arthur Street, Akron, Ohio

Branches and Agencies in All the Principal Cities

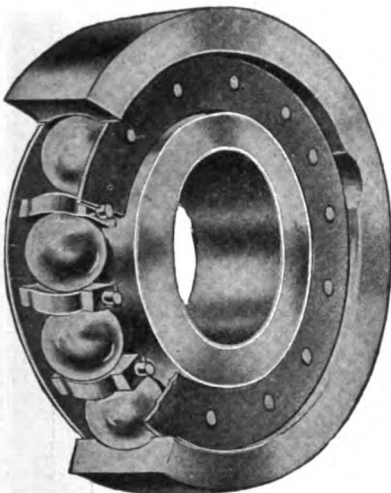
Canadian Factory: Bowmanville, Ontario

Main Canadian Office: Toronto, Ontario

We Make All Sorts of Rubber Tires

[275]

**The Pioneers to Employ 92%
of Balls in the Raceway**



SCHAFER Ball Bearings Fear No Oomparison

Most of the prominent races and endurance tours of 1910 were won by "Schafers Equipped Cars."

Our combination radial and thrust bearing is now ready. Send for details.

WRITE FOR CATALOGUE

SOLE IMPORTERS

BARTHEL, DALY & MILLER, 42 Broadway, New York City

THE ECONOMY IS ECONOMICAL



TWO CAPACITIES—1000 LBS. AND 2000 LBS.

Because of Unit Assembly

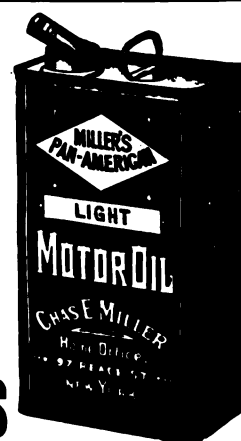
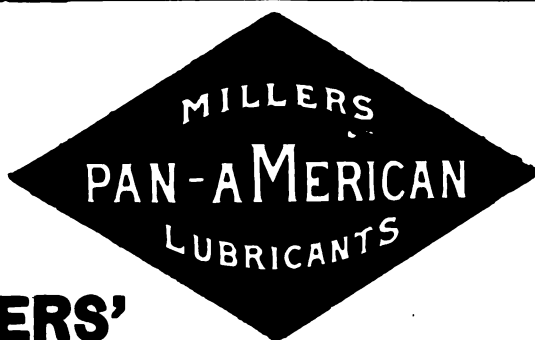
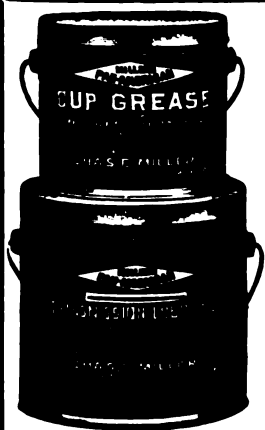
Economy Engines can be entirely removed or replaced in 45 minutes, transmission in 35 minutes, radiators in 15 minutes and jack shafts in 20 minutes. Either part without disturbing the other two, and all without disturbing the body.

This spells economy and convenience.

Back of it all is one of the largest exclusive truck factories in the west.

Send us an inquiry and let us show you why

ECONOMY MOTOR CAR COMPANY, Bissel and Cass Streets, Joliet, Ill.



MILLERS' Pan-American Motor Cylinder Oils

are refined from the finest grade Pennsylvania Crude and are pure, distilled, highly-filtered mineral oils. Have a high fire test, low cold test and not affected by climatic changes. They are made in three grades suitable for all types of water and air cooled Motor Cars, Motor Boats and Motorcycles. In order to convince you of the efficiency of these oils we are willing to make you a special price for an initial order, much lower than usually quoted on other high grade oils.

WE HAVE HANDLED THIS OIL DURING THE PAST EIGHT YEARS AND DO NOT HESITATE TO RECOMMEND IT TO BE THE EQUAL OF ANY FIRST CLASS OIL ON THE MARKET.

Special Prices for Manufacturers, Jobbers and Dealers

ADDRESS OIL DEPARTMENT

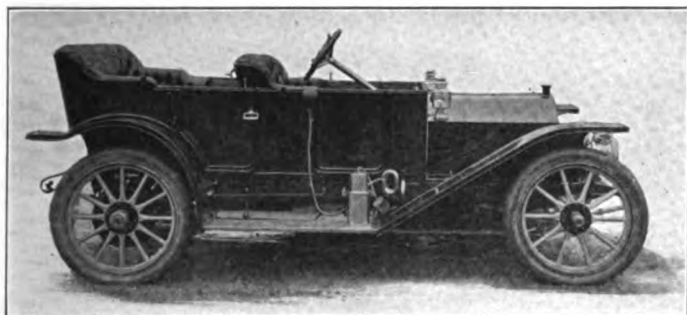
CHAS. E. MILLER, MANUFACTURER, JOBBER, EXPORTER AND IMPORTER
Home Office, 97-99-101 Reade St., New York City
The Largest Auto Supply House in America.

BRANCHES—Philadelphia, Boston, Cleveland, Detroit, Buffalo, Hartford, Atlanta, Brooklyn, New York City, New Orleans, Springfield.

You Can Pay More

for an automobile, but if you spend twice the amount of money you can obtain no more intrinsic value in materials, quality of workmanship or design; nor a car that will run as well and give more lasting satisfaction than a

Pullman



Model O Vestibuled Touring Car.

"Pullman automobiles are worthy of their name"

The PULLMAN car has solid strength of construction that means freedom from repairs. It has the power, the speed, the size to take you anywhere and at a low consumption of gasoline and oil.

The PULLMAN is an exceptionally powerful and reliable car that is built to fulfill every requirement of touring. Every part bears a perfect relation to every other part, which makes the PULLMAN a perfectly proportioned car—a car in which the correct suspension of every part greatly reduces the wear on tires.

In 1910 the PULLMAN won every endurance and speed contest in which it was entered, several times defeating cars of three times the PULLMAN cost and horsepower.

"Pullman Performances Prove Its Perfection"

Prices \$1650 to \$4000; 30, 35 and 50 Horsepower

Write for catalog and testimonials of owners.

PULLMAN MOTOR CAR CO.

Drawer W

YORK, PA.

Mosler
Spit Fire
THE PLUG WITH
THE DEEPEST CHAMBER

Made to fit any Engine any Thread



Magneto Type - Battery Type - Breech-Block Type The plug with the handle

A. R. MOSLER & CO.
163 W 29TH ST. NEW YORK.

CONNECTICUT

MAGNETO

Powerful and Unfailing

Send for Catalog No. 54

CONNECTICUT TEL. AND ELECTRIC COMPANY, INC.
20 Britannia Street Meriden, Conn.

PRESSED STEEL BRAKE DRUMS

Up to 24 Inches Diameter
and One-half Inch Thick.
Accurate to Dimensions.

PRICES RIGHT

Delivery When Wanted Special Stampings to Order

THE BOSSERT COMPANY, Utica, N. Y.

THE DIAMOND RUBBER CO.

Manufactures and Sells

TIRE MILEAGE

Not Merely Tires

THE DIAMOND RUBBER CO., Akron, Ohio

Direct Distributing Establishments in all principal cities.

THE CAR OF 1911 IS THE "HENRY"



Just to say "1911 Model" does not describe any Henry. The verdict of Henry dealers this month is, "The Henry is the car of 1911." Sales are big. Territories going. Men who have grown gray buying motor cars declare it their choice first, last and all the time.

**Dealers Who
Want The Leader**

Are you acquainted with the Henry line—the fine power, type and price combinations from \$900 to \$2200, big, roomy, solid-comfort cars? To know the Henry is to want territory. Ask us to send the Henry catalog and proposition.

DISTRIBUTORS
Crawford-Thomson Co., 1849 Broadway,
New York City—Distributors for East-
ern New York, Connecticut and New Jersey.
Henry Motor Car Sales Co., 480 Columbus Avenue,
Boston, Mass.—Distributors for New England.
Henry Motor Sales Co., 2039 Euclid Avenue, Cleve-
land, Ohio—Distributors for the State of Ohio.

**HENRY MOTOR CAR
SALES CO.**

1507 Michigan Ave., Chicago, Ill.

HEAT-TREATED AUTOMOBILE FRAMES

Crucible Chrome Nickel
Steels and Our Own Special
Alloys Used Exclusively.

PROMPT DELIVERIES

PARISH MFG. CO., Reading, Pa.

"The
Sign of
Quality"
Fifteen
Models
— 30,
35 and
40 h. p.—
\$1450 to \$2000

STAVER CHICAGO



Write
for our
interesting
dealers'
proposition

Staver
Carriage
Co., 76th
and Wallace
Street, Chicago.

Dept. 9013

Weed Chains

Wintry weather — muddy
roads, slippery pavement.
Every car will skid unless
you attach WEED CHAINS.
They positively prevent skid-
ding.

WEED CHAIN DEPARTMENT
United Manufacturers
250 West 54th St. New York



Since the "Year 1" in American automobile building the
Haynes has stood in a place by itself.
It was the first—the parent car. And the

HAYNES

has kept its leadership. It is the finished result of ripe ex-
perience—of seventeen years of intelligent, sincere endeavor.
A car of noble lines and distinguished lineage.
At \$2100, it is a value so remarkable that before you purchase
any car you should, in simple justice to yourself, investigate
the new Haynes models.

Send for our interesting, handsomely illustrated Annual and Book of Evidence.
HAYNES AUTOMOBILE CO., Station C, Kokomo, Ind.



The KAMLEE Auto Trunk

is the only trunk for motorists that is made by motoring trunk-makers—who know what motorists need. It is built to conform to the shape of the tonneau of any make or type of car and is

Absolutely Dust Proof and Rain Proof

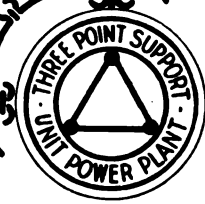
A leaflet giving full descriptions and prices will be forwarded on request.

The KAMLEE Co.
345 Milwaukee Street
MILWAUKEE, WIS.

BRANCHES AT

New York, Chicago, San Francisco, Honolulu, and San Juan, P. R.





Stevens-Duryea Motor Cars

Built 'Round a Principle

EACH MODEL PRE-EMINENTLY CONFORMS TO THE DEMANDS OF THE DAY

Motorists should have copies of our latest literature. They contain definite and concrete motor car information—not general statements and platitudes.

Let us mail you copies.


STEVENS-DURYEA COMPANY
Chicopee Falls, Massachusetts

1912 Motor Cars


Which are being designed by able engineers at the present time, will be equipped with the Hyatt Roller Bearing, High Duty Type, in more cases than ever.

Are you planning to use them?

Hyatt Roller Bearing Co.
Detroit, Michigan



Heinze High Tension Magneto



Construction—Mechanically unequalled.


Durability—Greater than the life of the car.

Efficiency—Proven by the users.

Catalogue H with full information is yours for the asking.

HEINZE ELECTRIC COMPANY
Lowell, Massachusetts

OIL YOUR MAGNETO SPARINGLY



but oil it regularly and with the right lubricant. Don't use Cylinder Oils. They deposit sediment that makes grit, gums bearings and clogs the delicate action of the magneto.

Use "3-in-One." It's just heavy enough to lubricate properly and continuously. It's just light enough to reach to the very heart of the ball bearings or other style bearings and make every part work without hitch or hesitation. It can't gum, harden, collect dirt or dry out.

Try it at our expense. We'll gladly send you a generous size Free Sample Bottle and Special Auto Circular. Or buy it at any garage, supply house or store—8 oz., 50 cts.—3 oz., 25 cts.—and trial size, 10 cts.

3 IN ONE OIL CO., 64 Broadway, New York.

**A Complete
Line
for
the Agent**

**4 Cylinder Cars
24 to 40 H. P.
\$1500 to \$2250**

Write for catalogue
and territory.

KLINE KAR

**Kline Kar
Owners
Are Satisfied
Customers**

**6 Cylinder Cars
50 and 60 H. P.
\$2650 to \$3250**

B C K MOTOR CAR COMPANY, York, Pa.

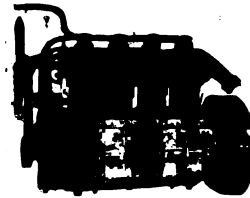
ARNOLD ALARM

**The Perfect Electric Signal for
Automobiles and Motor Boats**

Send for Special Offer. The best retailers
proposition ever presented. Send now.

STANDARD ELECTRIC WORKS, Dept. H, Racine, Wis.

RUTENBER MOTORS



now can be had in 18 makes of pleasure cars and in 10 makes of commercial cars, and the number is rapidly growing. Why? Because—"They're the best." Place your orders early for prompt deliveries.

THE WESTERN MOTOR CO.
MARION, IND. LOGANSPORT, IND.
Sales Department, Marion, Ind.

FOR LONG RANGE - FOR SHORT RANGE

SIRENO

ELECTRIC HORN

The choice of motorists who realize the need of a long range warning and the value of press-the-button operation, yet who desire not to startle or offend those whom they warn. It is the signal of a gentleman and a careful driver.

The Sireno Company
705 Taylor Building
NEW YORK CITY

You Can Always Depend On Reliance Spark Plugs

Get our new 48-page book—
"Ignition and Spark Plug
Talk"

FREE—The most complete, comprehensive and condensed vest pocket reference book ever published on the subject. Full of valuable hints. Tells just what you want to know about Ignition, etc.—makes you master of your own ignition system. Write at once for a copy.

JEFFERY-DEWITT CO.
65 Butler Ave., DETROIT, MICH.



Established 1844

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1895

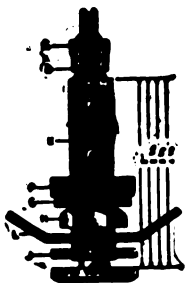
SIMPLE AND ABSOLUTELY AIR TIGHT

Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires, Hartford Dunlop Detachable Tires, Fisk Detachable Motor Tires, and New Goodyear Detachable Motor Tires.

Our No. 777 Motor Tire Valve is the standard for 2½ inch and 3 inch tires and our No. 725 Motor Tire Valve is the standard for tires larger than 3 inches.

Supplied to the Trade by All Tire Manufacturers

Manufactured by **A. SOHRADER'S SON, Inc., 28-30-32 Rose St., New York**



Bosch-Equipped Cars Win

In Panama-Pacific Race

San Francisco, February 22, 1911

The Free-for-All—163.8 Miles—Won by

Car	Driver	Magneto
Pope-Hartford	Dingley	Bosch

The Light Car Race—98 Miles— Won by

Car	Driver	Magneto
Mercer	Bigelow	Bosch

Dingley in Bosch-Equipped Pope-Hartford also won second place in Heavy Car Race.

Thus Bosch Magnetos Triumph in first important 1911 race after winning 42 of the 44 long distance races of 1910.

"Specify Bosch for Your New Car"

Rust-Proof Car Bodies and Parts

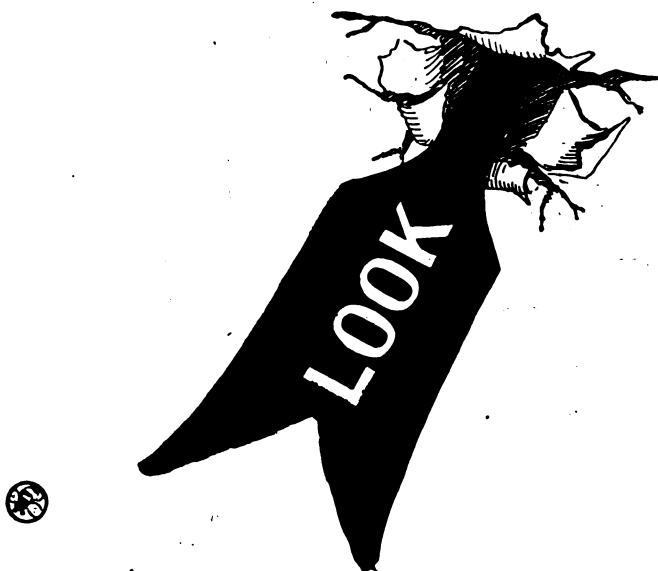
Easily take a perfect finish



and hold it.

You should have Rust-Proof material in your car.

ALUMALOYD SHEETS Are Rust-Proof



THE ALUMALOYD PRODUCTS CO.
Canton, O.

Have you a sample?

Pressed Steel Work and STAMPINGS for Commercial Cars ALL SIZES

OUR plant equipment is of the largest and most complete kind; our experience dates from the beginning of the automobile industry and our reputation guarantees the quality of the product. We are ready and willing to lend a helpful hand to builders and have a fund of valuable information which is at their disposal. Write us.

THE CROSBY CO., Buffalo, N. Y.

Empire Tires

WEAR LONGEST

EMPIRE TIRE CO., Trenton, N. J.

Regal 30

"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

\$1250

Runabout, Baby Tonneau, Touring Car, Coupe
Greatest Automobile Value in America

WRITE FOR OUR LITERATURE

REGAL MOTOR CAR COMPANY, Detroit, Mich.

You can buy

Rebuilt Thomas Flyers
and other makes practically as good as new
which are cheaper and better than some new
cars. Prices range from \$750 up. Second-
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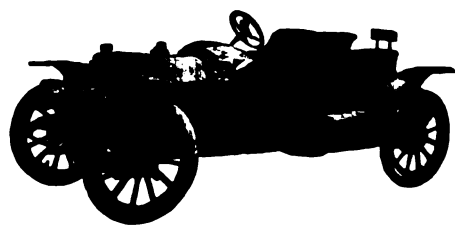
E. R. THOMAS MOTOR CO., BUFFALO, NEW YORK

New York Branch: Broadway and 63d Street
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MERCER

TOURING CAR
TOY TONNEAU
SPEEDSTER

Each \$2150

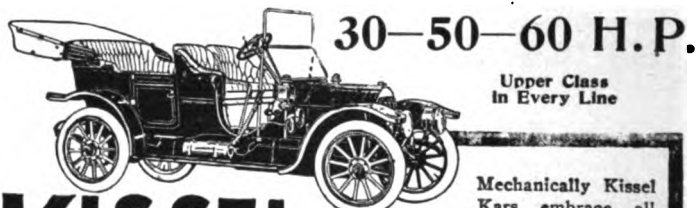


Style, Luxury, Qual-
ity, Strength, Speed.

Made Right and Stays
Right

Let us hear from you

MERCER AUTOMOBILE CO., Box 126, Trenton, N. J.



30-50-60 H.P.

Upper Class
in Every Line

KISSEL CAR

Mechanically Kissel
Cars embrace all
the best features of approved con-
struction. They are refined in
every detail and superbly appointed. 4 cyl., 30
H. P., \$1500; 4 cyl., 50 H. P., \$2000; 6 cyl., 60
H. P., \$2500. 50 H. P. 3-Ton Truck, \$3500.
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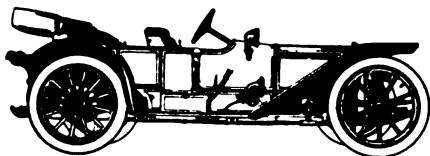
EVERY
INCH
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THE AMERICAN

"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading
cities. Increased output this year offers a new opportunity to buyer and
dealer alike.



**SEMI-TORPEDO
TRAVELER**

Underling
frame; 40 in.
wheels; 4 cyl.; 50
H. P., \$4250.

AMERICAN MOTORS CO., Dept. V, Indianapolis, Ind.
Licensed under Selden patent.

Metz 1911 Runabout

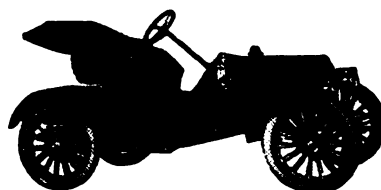
Every car fully equipped
exactly as shown

\$485

EQUIPMENT—Bosch magneto, top and slip cover, gas
lamps and generator, oil lamps, horn, 28 x 3 standard
clinchers tires, and set of tools.

GOOD DEALERS WANTED IN UNOCCUPIED TERRITORY.

METZ COMPANY, Waltham, Mass.



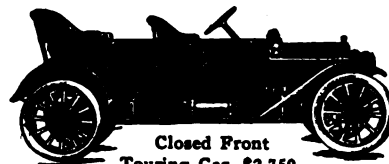


1911 CATALOGUE READY

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New Britain, Conn., U. S. A.
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"The Easiest Riding Car in The World"



Closed Front
Touring Car, \$2,750

Holds more long-distance racing records
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Amplex

The one car in America that offers you all that a high grade, high power car can offer; and in addition the tremendous advantages in operation and maintenance which only a perfect valveless motor can give.

SIMPLEX MOTOR CAR COMPANY Dept. D Mishawaka, Ind.
Licensed under Selden patent.

Jackson

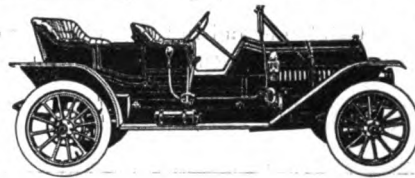
Unit Power Plants
Keep Oil In and Dirt Out

Model 51—\$2200
Model 41— 1700
Model 38— 1650
Model 35— 1250
Model 30— 1250
Model 25— 1100

All touring models fitted with removable front doors and panels at a slight extra charge.

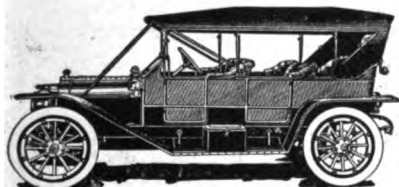
Jackson
Automobile Co.
Jackson, Mich.

Licensed under Selden Patent



WRITE FOR INFORMATION ABOUT

THE SELDEN CAR FOR 1911



With complete touring equipment, from \$2250 to \$2800

Good territory still open for live agents.

SELDEN MOTOR VEHICLE CO., Rochester, N. Y.
GEO. B. SELDEN, Pres. Licensed under Selden patent

The Selden Car stands for every desirable development in the automobile—from the powerful perfectly constructed engine to the evenly balanced quality parts that go to make the finished car.

A wide range of body styles and prices. Roadster, touring and torpedo bodies. New four and six passenger torpedo bodies with fore-doors.

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GUARANTEED FOR LIFE

The most economical car in the world

Runabout \$750 Touring Car \$900
Torpedo Runabout . . . \$850 Coupe \$1100

HUPP MOTOR CAR COMPANY
Dept. K DETROIT, MICH.

Maytag
SIXTEEN
MODELS

Hill Climbers

A most complete line, both pleasure and commercial, ranging in price from \$650 to \$1750.

A CAR FOR EVERY ARGUMENT
YOUR TERRITORY MAY BE OPEN

Write today—Desk A

MAYTAG-MASON MOTOR CO., Waterloo, Iowa

"Gramm"

THE STRONG POINTS—

Three Point Suspension.
Gramm Multiple Disk Clutch.
Gramm Roller Spring Suspension.

The Gramm Motor Car Co.

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LIMA, OHIO

New York Headquarters—CROSS-MAGILL MOTOR TRUCK CO.,
30 Church St., New York

Moline

35 H. P.
112-in. Wheel Base
36-in. Wheels

"King of the Road"

THE latest addition to the "Dreadnought" Moline 1911 Models. Beautifully finished in a rich dark grey, heavy nickel and black enameled trimmings. Price includes zig-zag windshield, five lamps and full kit of tools. Equipped with our famous



Fore Door, \$1700

4 x 6 Long Stroke Motor

with which we won Chicago Trophy in 1910 Glidden Tour and Team Trophy in 1000 mile Chicago run. Write for booklets on both runs and 1911 Catalog


TOURING TYPE, \$1650 TOY TONNEAU, \$1600

Some good territory for live dealers.

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MUNCIE, INDIANA



Steering Gears
Transmissions
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Clutches and
Control Levers

MODEL 95—UNIT TRANSMISSION
Brake and Clutch with Raybestos-faced Discs.
25-35 H. P.

The 1911 De Tamble

Model G—2-Passenger Roadster.....	\$1,000
Model H—5-Passenger Touring Car.....	1,150
Model J—5-Passenger Fore Door.....	1,200
Model K—7-Passenger Fore Door.....	1,675

You can't pay more and get your money's worth.

Catalogue and full details of our complete line sent on request. Open territory proposition for live dealers.

THE De TAMBLE MOTORS CO. ANDERSON INDIANA

The 1911 Paige-Detroit

4 Cycle—4 Cylinder Full 25 H. P. Motor **\$800**

Complete specifications and catalogue upon request

THE PAIGE-DÉTROIT MOTOR CAR CO.
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Two Factories Now for

BROWN-LIPE GEARS

Transmission and Steering Gear Department
Operated by

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Differential Gear Department by

BROWN-LIPE-CHAPIN COMPANY
SYRACUSE, N. Y.

Capacity Immensely Increased H. W. CHAPIN, General Manager

30,000 MILES WITHOUT ADJUSTMENT.
THESE PARSONS WHITE BRASS BEARINGS RAN
THAT DISTANCE IN A PACKARD CAR. THEY ARE BACK IN
THE CAR WITHOUT EVEN BEING SCRAPPED
STILL RUNNING RUNNING STILL.



Cramp
—
Metals

THE W. CRAMP & SONS SHIP & ENGINE BUILDING CO.
PHILADELPHIA, PENNA.

F & S ANNULAR BALL BEARINGS

(Made in Germany)

The Dependable Kind—

J. S. BRETZ COMPANY

Sole Importers

250 West 54th St.,

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1911 MODELS
NOW READY

The Perfectly Standardized Car

ABBOTT MOTOR CO.
143 WATERLOO ST., DETROIT, MICH.

*Write for catalogue
and specifications.*



Baldwin Chains

give that kind of service which the buyer has a right to expect from chains which have been chosen because of their well-known quality; accuracy in pitch and durability being especially distinguishing features.

BALDWIN CHAIN & MFG. COMPANY
Worcester, Mass.

SALESMEN—H. V. GREENWOOD, 166 Lake St., Chicago, Ill.; C. J. IVEN, Rochester, N. Y.; M. A. BRYTE, 788 Mission St., San Francisco, Cal.

Packard

CABLE

Is Absolutely Sure

Don't take chances on the wiring of your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

Just put on Packard Cable and forget all about your ignition troubles

NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY

Send for samples and prices before ordering elsewhere

THE PACKARD ELECTRIC CO., 4328 Dana Ave., Warren, O.



DO YOU WANT DIE CASTINGS FREE

from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?



Van Wagner makes that kind.

Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. WRITE US.

E. B. Van Wagner Mfg. Co., 706 Union Bldg. SYRACUSE, N. Y.

GLASSO

PREVENTS FOGGY WIND SHIELDS

Glasse used

Rub a little GLASSO on your wind shield and you are sure of a clear vision. Rain, snow or mist slides off glass that has been polished with GLASSO like water off a duck's back.

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A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasse will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

THE GLASSO COMPANY
Motor Car Equipment Co., Distributors
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PRESSED STEEL

Automobile Frames

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THE PARISH & BINGHAM CO., Cleveland, Ohio

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Fits All Tires

THE UNITED RIM COMPANY
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Manufacturers of

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The Raymond and Duplex Brake

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are and have been the recognized quality standard for 20 years. Strong, accurate and durable. Let us cut your sprockets.

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150 W. Georgia St. Indianapolis, Ind.
Capacity 3,000,000 feet per year.

MONEY SAVERS AND MONEY GETTERS

Atterbury Commercial Wagons and Trucks

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ATTERBURY MOTOR CAR COMPANY, Buffalo, N. Y.

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Write today for copy
1911 Catalog. Missing
means losing.

Ford Motor Company DETROIT, MICH.

FRANKLIN AUTOMOBILES

Besides saving in weight and complication Franklin air cooling removes all cause for worry, as there is not anything about the cooling to get out of order, freeze, overheat or break down.

A Franklin saves two thirds of the usual tire expense and at the same time goes faster and farther in a day than other cars.

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

BOWSER

Gasolene Storage Systems

Keep oil perfectly clean, safe and strong as when purchased. Systems Suitable in Style, Size and Price—for your individual need.

We make the lowest priced and we make the best systems.

Write for our new book—34. It's free and of interest for you.

S. F. BOWSER & CO., Inc., Ft. Wayne, Ind.

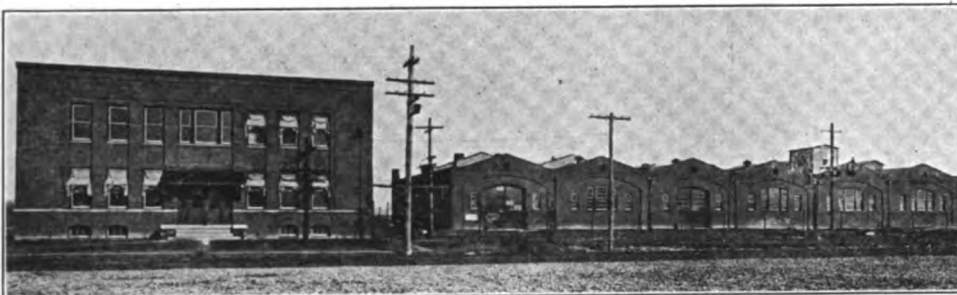
Boston, New York, Philadelphia, Chicago, San Francisco, Toronto, St. Louis, Minneapolis, Dallas, Atlanta.

Leading automobile manufacturers
equip their cars with the

Remy Magneto

year after year. Severest tests in the hands of thousands of owners have established Remy supremacy.

Specify the Remy Magneto on your new car and be assured of Satisfactory Ignition



Send Blueprints for Quotations to

WETHERILL FINISHED CASTINGS COMPANY, Philadelphia



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Pressure Castings

of any metal and size desired, including Bronze, Aluminum Alloys and Bearing Metals.

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Men whose lives mean most to themselves and to others;

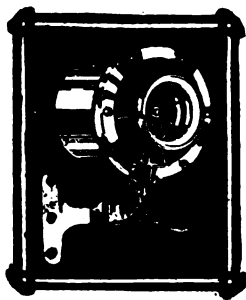
Men who carry the most insurance,—whose individual policies often exceed the million mark;

Men who are most anxious not to injure others, or others' property;

Men who by standing, conservatism, responsibility, represent the best citizenship:

***—these men—the country over—carry
KLAXONS on their automobiles.***

Is more proof needed—that the KLAXON to-day stands endorsed and accepted as the standard automobile signal for public safety?



KLAXONET

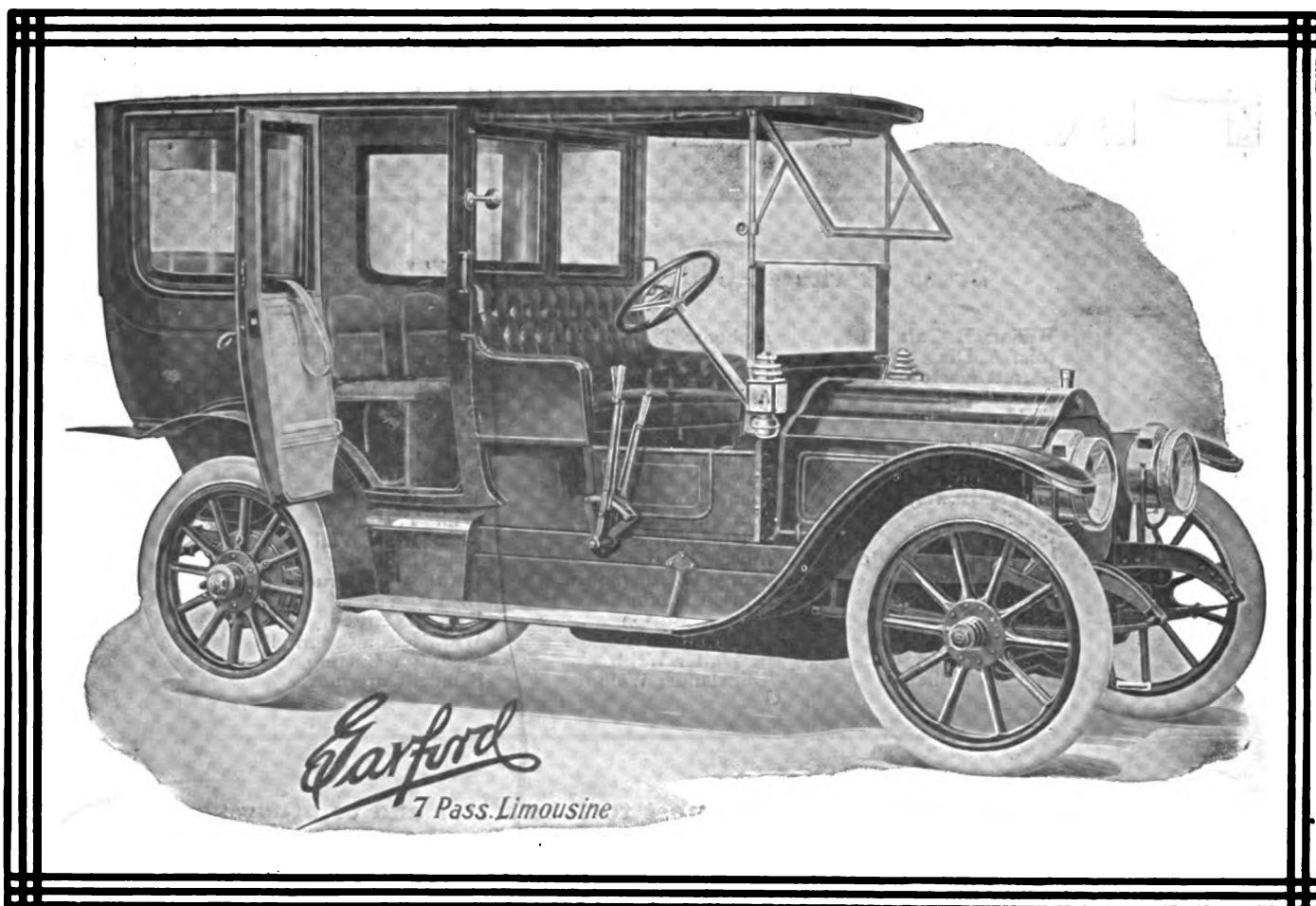
LOVELL-McCONNELL MFG. CO., Newark, N. J.

KLAXON

"The Public Safety Signal"



KLAXON



THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

Licensed under Selden patent.

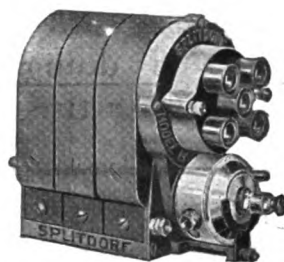
THE MOTOR WORLD

A trade paper giving the
World's Motor News

Ten cents a copy—
Two dollars a year



SPLITDORF VICTORIOUS



At the New Orleans Mardi Gras Speed Carnival

SPLITDORF equipped cars made the following splendid showing at the three day automobile race meet:

		Firsts	Seconds	Thirds
Buick	(Burman)	5	1	0
National	(Disbrow)	1	3	2
National	(Aitken)	1	1	1

Racing drivers and experienced motor car owners are rapidly being convinced that the SPLITDORF never fails to give Perfect Ignition and is Absolutely Reliable.

C. F. SPLITDORF

Walton Ave. and 138th St.

Branch, 1679 Broadway

New York



United States Tire Sales are by long odds the easiest and most satisfactory sales to make.

It is long-headed, hard-headed business judgment that has caused the best dealers in the country to line up with us. They recognize that the United States Tire Company, with its immense facilities and resources, is capable of doing more and is doing more to assist its dealers in the actual making of sales than any other tire maker ever before attempted.

In the matter of example; what ever before used — full pages — to carry his motorists of this is but a portion of advertising, for tire maker has nearly 200 medi-

UNITED STATES TIRES

Continental
G & J

Hartford
Morgan & Wright

ARE GOOD TIRES

in most of them message to the country? Yet this of the United

States Tire Company advertising campaign now under way.

Or what tire maker has ever given its dealers the combined manufacturing and distributing facilities of five immense plants scattered throughout the country, and branches and agencies in practically every large city?

Yet these and other important advantages are today the working assets of every United States dealer.





The absolute reliability of the United States Tire Company is a big asset to every dealer who handles the line.

Back of every tire turned out of our plants is the reputation for skilful tire making and square business dealing which every dealer knows has for years characterized the four separate organizations.

The United States dealer is absolutely sure of his ground. He has confidence in the concern he is dealing with, and confidence in the product he is selling.

He knows
Tires will back
good quality all
he can possibly
and that he won't
valuable time
for poor service to dissatisfied customers.

UNITED STATES TIRES

Continental
G & J

Hartford
Morgan & Wright

ARE GOOD TIRES

that United States
up with genuine
the good things
say about them,
have to spend
making excuses

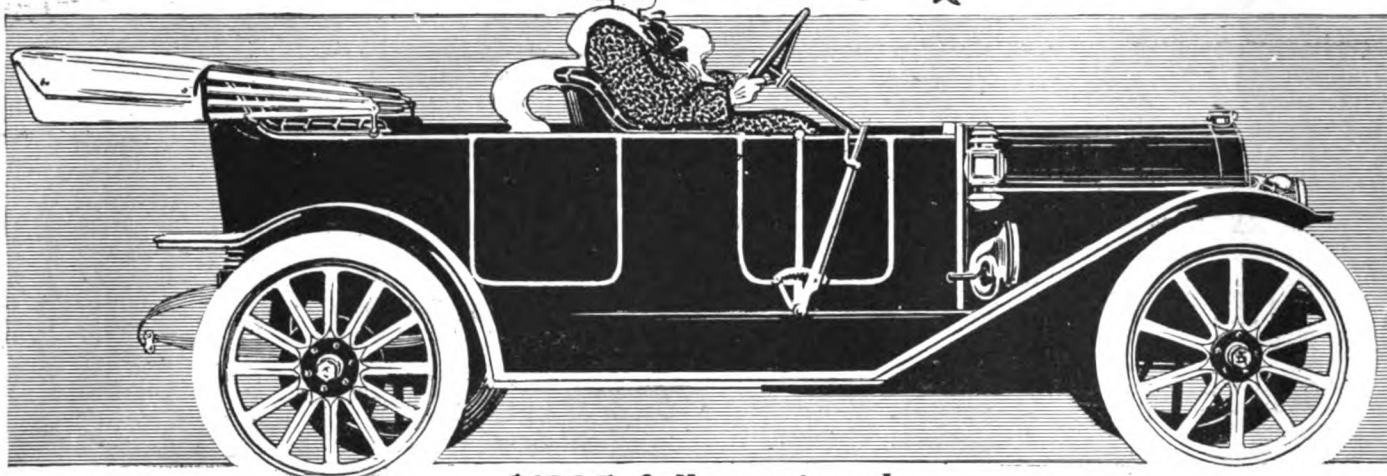
You are probably now handling one or more of the four famous brands of United States Tires. If not, in the interests of good business, you ought to write today for our complete dealer's proposition.

United States Tires
America's Predominant Tires

UNITED STATES TIRE COMPANY, Broadway and 58th St., New York



Sampson 35



\$1325 fully equipped

Five elements in the Sampson give it extraordinary value

THESE are the elements you would insist on in buying any car, however high its price.

They are—right construction, utility, comfort, beauty and correct price.

You find them fully realized in the Sampson 35 and at a price that is remarkably low. In fact, you could not have bought an equal value for \$3000 three years ago.

Quantity buying, economical manufacture, co-operative selling and efficient organization make its price possible.

These and specialization—concentration on a single model—a fore-door touring car—make the Sampson 35 possible.

In judging the value of a car, motorists properly attach especial significance to its name.

The name stands for the organization behind the car, the spirit of its conception, the carefulness of its making, the responsibility of its makers.

The safest guarantee of these is experience.

Fifteen years' experience commends the Sampson 35.

The same experience produced the Columbia, the Stoddard-Dayton, the Maxwell and the Brush.

They are all United States Motor Company products. The Sampson 35 is the latest United States Motor Company car.

TO produce it, fifteen years' experience in designing contributed.

Its adherence to standard tried features is the result—its powerful, compact, silent motor, its heavy, strong selective transmission, its full floating rear axle, its long 114-inch wheel-base, its long, low, straight lines.

Fifteen years' experience in manufacture built it—with the consequent economies in method, in selection of material, in manner of treatment.

Fifteen years' experience in selling refined it—through exact knowledge of the demands of good taste—until no car at any price excels it in grace and beauty.

The Sampson 35 could not help be a good car—an exceptional car at its price. Experience gives it its wonderful value.

ANALYZE the Sampson 35 and you recognize at once its mechanical excellence, its staple construction.

Examine it and you recognize its beauty and excellence of finish.

Every detail speaks its good taste, its elegance.

Ride in it and you appreciate its comfort—its generous legroom, its low, wide, easy seats, its soft, thick upholstery.

Its long, flexible springs absorb road shocks. Its large, 34 inch wheels minimize unevenness of the road.

There remains only its utility to demonstrate—its usefulness, its low operation and upkeep cost.

It is admirable for summer tours; its fore-doors make it an ideal winter car.

It is not heavy—therefore it is economical on tires, on gasoline and in use of oil.

It is easy to handle and therefore suited to city use for business, while a better car for town and country use is not made.

Catalog on request

Alden Sampson Manufacturing Co., 1514 Oakland Ave., Detroit, Mich.

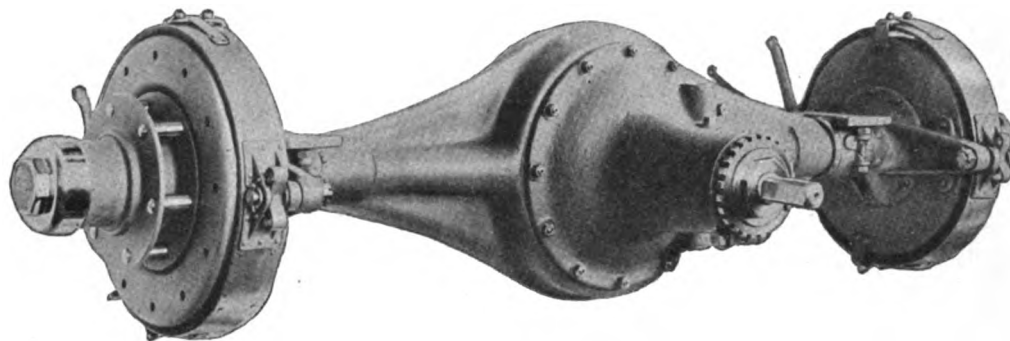
Division of the United States Motor Company



The Mayo—the radiator thoroughbred

¶ The more a man knows about mechanical excellence the better he appreciates Mayo Radiators. Engineers and designers are among their warmest advocates.

Mayo Radiator Company
NEW HAVEN, CONNECTICUT



Full Floating Adjustable Type

- ¶ Driving member is inserted as a unit and may be adjusted in place.
- ¶ Housing is stamped from sheet steel. This construction provides strength at the points where the strain is the greatest.
- ¶ Internal and external brakes are 14 in. diameter.
- ¶ Axle Shafts are made from alloy steel "Heat Treated" so as to give the highest physical properties possible.
- ¶ Pinion and driving shaft are integral. Forged from alloy steel "Heat Treated." Teeth are planed.
- ¶ Can be equipped with annular or roller type bearings.
- ¶ The design, material and workmanship on this axle are of the highest quality.

Write Us Regarding Your Requirements

THE AMERICAN BALL BEARING CO.

L. S. & M. S. Ry. and Edgewater Park
CLEVELAND, OHIO

FISK

Removable Rim

You Can Depend on the Rim That Has Given Satisfaction for Three Years —

We did not "try it" on the public. The Fisk Rim was right before it was sold. Its instant success created the demand for demountable equipment on touring cars, which led to the flooding of the market with rims of various types — most of them in the experimental stage today.

The success of the Fisk Rim is due to its speed in operation, its safety, its elimination of staybolts, special tools and excess weight, and its simple construction. Remember — Complicated mechanism demands perfect mechanical work and provides the opportunity for rust, wear and non-fitting parts.

Send at Once for Our Booklet on Removable Rims.

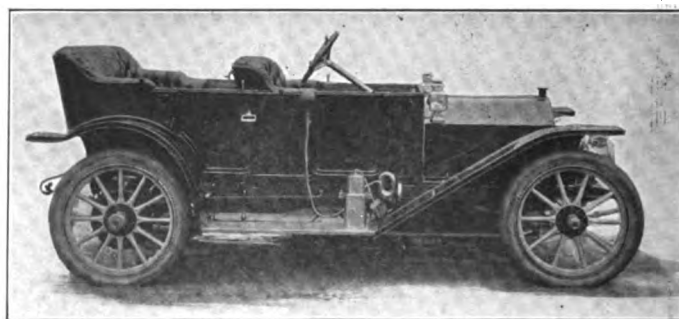
The Fisk Rubber Co.
Dept. 23 Chicopee Falls, Mass.

Direct Factory Service in 29 Cities

You Can Pay More

for an automobile, but if you spend twice the amount of money you can obtain no more intrinsic value in materials, quality of workmanship or design; nor a car that will run as well and give more lasting satisfaction than a

Pullman



Model O Vestibuled Touring Car.

"Pullman automobiles are worthy of their name"

The PULLMAN car has solid strength of construction that means freedom from repairs. It has the power, the speed, the size to take you anywhere and at a low consumption of gasoline and oil.

The PULLMAN is an exceptionally powerful and reliable car that is built to fulfill every requirement of touring. Every part bears a perfect relation to every other part, which makes the PULLMAN a perfectly proportioned car—a car in which the correct suspension of every part greatly reduces the wear on tires.

In 1910 the PULLMAN won every endurance and speed contest in which it was entered, several times defeating cars of three times the PULLMAN cost and horsepower.

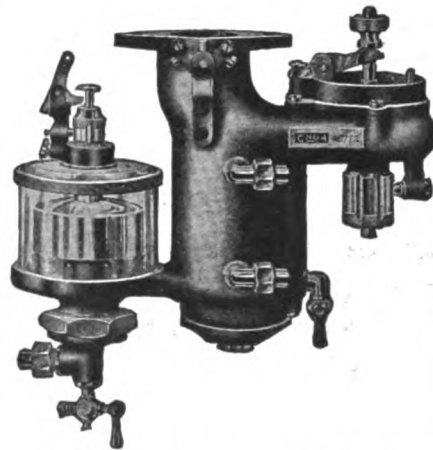
"Pullman Performances Prove Its Perfection"

Prices \$1650 to \$4000; 30, 35 and 50 Horsepower

Write for catalog and testimonials of owners.

PULLMAN MOTOR CAR CO.
Drawer W YORK, PA.

STROMBERG CARBURETORS



It is better to specify a STROMBERG CARBURETOR on your car than to wish you had. Send for booklet No. 5.

"BEST BECAUSE THEY GIVE THE BEST RESULTS"

STROMBERG MOTOR DEVICES COMPANY

Main Office and Factory, 64-66-68 East 25th Street, Chicago

New York Branch, Automobile Building, 1926 Broadway, at 64th Street

Boston Branch, Motor Mart, 91 Church Street

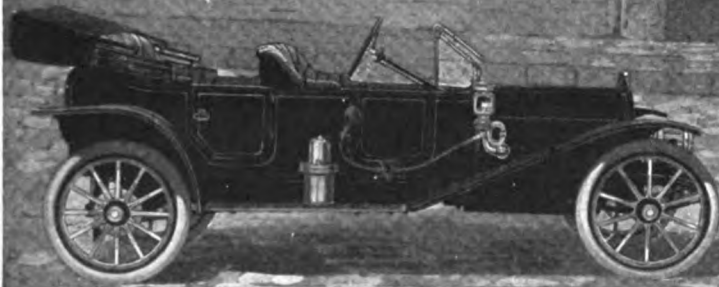
Northwestern Branch, 1514 Hennepin Avenue, Minneapolis

Detroit Branch, 1211 Woodward Avenue

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Companion of the costliest cars at home and abroad

Hupmobile
GUARANTEED FOR LIFE



Foredoor Touring Car, \$925, top and windshield not included.

What other car of popular price will you so frequently see side by side with cars of seven-passenger capacity?

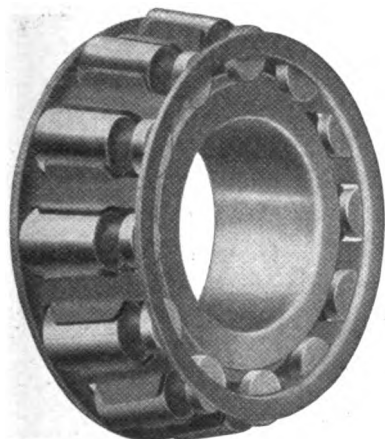
London, England, thinks as well of the Hupmobile as New York—New York as well as its home city, Detroit—and Detroit as well as scores of cities larger and smaller in every state of the Union.

Wherever the Hupmobile goes—there goes satisfaction.

Hupp Motor Car Company, Dept. K, Detroit, Michigan



Runabout with detachable doors, \$775, top and windshield not included.
Detachable doors for any Hupmobile Runabout, \$25.



Timken Roller Bearings

¶ The majority of manufacturers of automobiles in America are using TIMKEN ROLLER BEARINGS in the front axles of their cars.

¶ As the front wheel is the point of severest service, the almost universal use of TIMKEN ROLLER BEARINGS at this point is an admission of TIMKEN EFFICIENCY under severest conditions.

¶ The bearing that is efficient and reliable for front wheel service is the safest bearing for any other application, and most manufacturers who have used TIMKEN ROLLER BEARINGS at all, have extended them to other applications besides the front axles.

¶ TIMKEN ROLLER BEARINGS are correct in principle. They are adjustable, obviating replacement on account of wear, which is necessary with non-adjustable bearings.

¶ TIMKEN ROLLER BEARINGS are the only bearings that have proven by many years' service that they will stand as great end thrust as radial load.

THE TIMKEN ROLLER BEARING CO.

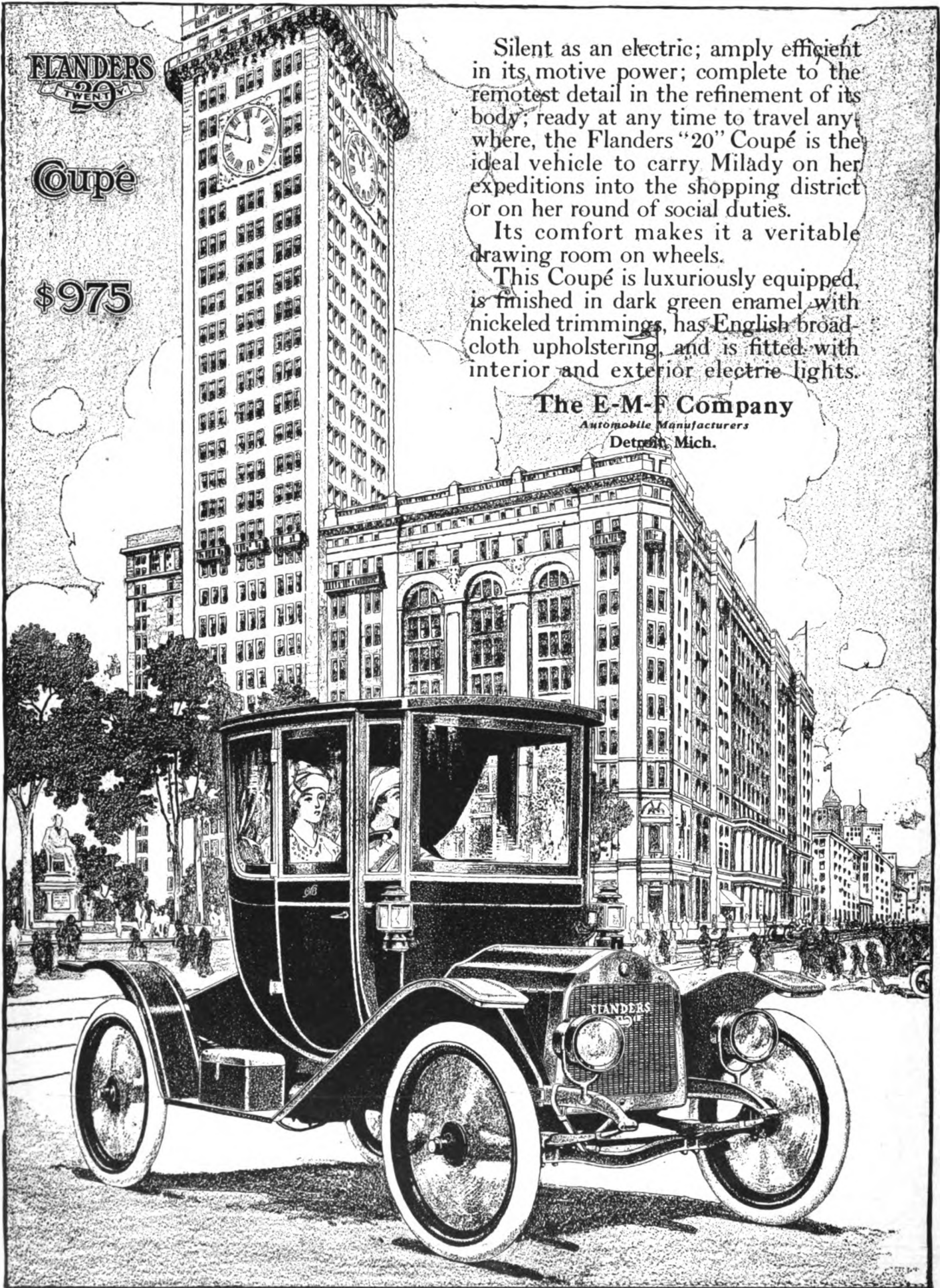
CANTON, OHIO, U. S. A.

FLANDERS
20**Coupe****\$975**

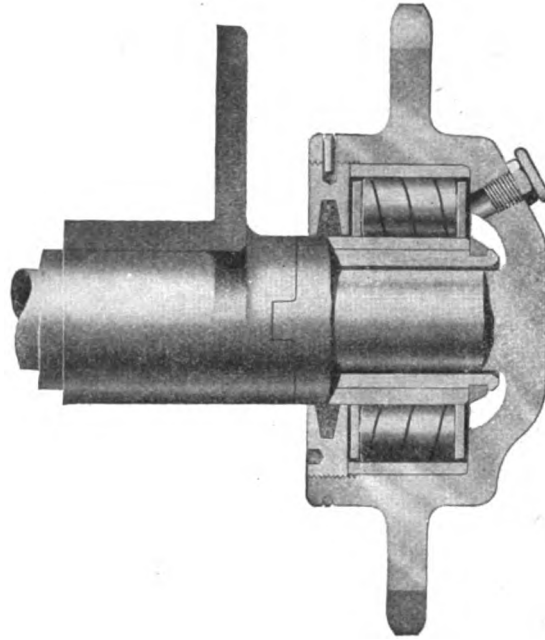
Silent as an electric; amply efficient in its motive power; complete to the remotest detail in the refinement of its body; ready at any time to travel anywhere, the Flanders "20" Coupe is the ideal vehicle to carry Milady on her expeditions into the shopping district or on her round of social duties.

Its comfort makes it a veritable drawing room on wheels.

This Coupe is luxuriously equipped, is finished in dark green enamel with nickeled trimmings, has English broadcloth upholstery, and is fitted with interior and exterior electric lights.

The E-M-F Company*Automobile Manufacturers*
Detroit, Mich.

Hyatt Roller Bearings



MMOTOR TRUCK JACK SHAFTS equipped with Hyatt High Duty Type Bearings guarantee the truck builder maximum practical value and dependability.

In this design, the bearing is mounted on the tube with its center in direct line with the center of the sprocket, hence with the pull of the chain. This makes possible a strong, rigid construction, prevents disalignment of the chains, and affords ideal distribution of load on the bearings.

The Rollers of the High Duty Type are of alloy steel properly heat treated and ground, and operate on solid inner and outer steel casings, also heat treated and ground.

A bearing of this construction embodied in such a design, offers the best possible arrangement for the outer end of the Jack Shaft.

Hyatt Roller Bearing Co.

Detroit, Michigan

Franklin Commercial Cars



Wherever an air-cooled, pneumatic-tired Franklin truck is in use it is paying for itself in the service that it gives and in the money it saves in upkeep and operating cost as compared with that of other forms of delivery.

The Franklin motor truck service, efficiency considered, is the lowest cost form of delivery. It reduces by fifty per cent upkeep costs that are considered unavoidable where the ordinary motor truck is used.

In the purchase of any type of commercial motor vehicle it should always be remembered that the highest standard of efficiency works for the greatest economy.

In the Franklin truck resilient construction and large pneumatic tires absorb all road shock. Because of this it can maintain a much higher rate of speed with perfect safety than is possible with a truck using

solid tires. It is the most efficient because it has greater ability to move a larger quantity of goods in a given time.

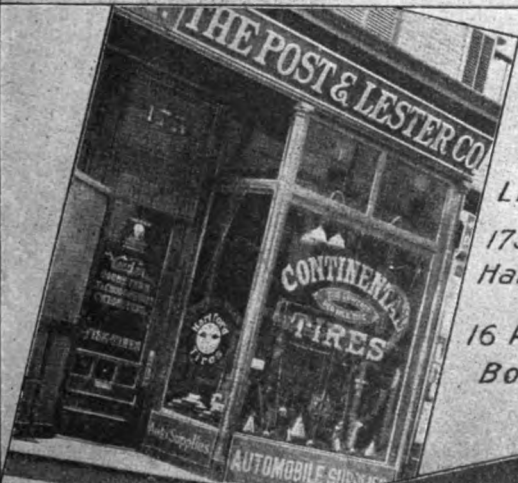
Destructive jar and vibration being absorbed depreciation and necessity for repairs are kept at a minimum. The truck lasts longer and there are fewer interruptions to the service.

Franklin air cooling has demonstrated its superior economy and efficiency under every possible condition. The Franklin truck holds the world's economy record for motor trucks. Franklin air cooling costs nothing to maintain. It does away with all possibility of trouble and expense with the cooling system.

Send for Franklin commercial car catalogue. The Franklin line includes express body trucks, stake platform trucks, light delivery cars, hotel and passenger omnibuses, taxicabs and ambulances.

FRANKLIN AUTOMOBILE COMPANY Syracuse N Y

RETAIL DISTRIBUTORS-**HESS-BRIGHT-BALL BEARINGS.**



POST & LESTER CO.
175 Asylum St.
Hartford, Conn.
16 Park Square,
Boston, Mass.



HESS-BRIGHT COMPANY,
1800 Michigan Ave. Chicago



HESS-BRIGHT COMPANY
1974 Broadway, New York.

CHANSLOR & LYON Motor Supply Co.
San Francisco, Cal.



CHANSLOR & LYON Motor Supply Co.
Los Angeles, Cal.



CHANSLOR & LYON
M. S. Co.
Spokane,
Wash.



Also SOLD by
CHANSLOR & LYON, Seattle and Fresno.

ANNOUNCEMENT

The Consolidated Motor Car Co.

Manufacturers of High Grade

MOTOR CARS, TAXICABS, TRUCKS

Capital, \$4,000,000

H. A. CROXTON, President and General Manager
K. F. GILL, First Vice-President
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A. L. KULL, Manager Commercial Dept.	

The Consolidated Motor Car Company now controls and operates The Royal Tourist Car Company, The Croxton Motor Company, of Cleveland, and The Acme Body and Veneer Company, of Rahway, N. J.

Following a conservative policy, it is the intention of the Consolidated Company to absorb and control other companies, from time to time, as business may demand, to enable the manufacturing and distribution of a more complete line of motor vehicle equipment, at a more reasonable price than can be done by any other controlling or manufacturing concern in the world.

The purpose of this merger is to ultimately control the units of motor car manufacture, to absorb accessory lines, to save expense in manufacturing and distributing pleasure cars and commercial vehicles—in a word, to cut off every dollar of expense that can be saved in the making, equipment, and selling of motor cars of every description so as to give the public the very best at the very least, consistent with sound business principles.

THE CONSOLIDATED MOTOR CAR CO.

ROYAL TOURIST

CROXTON

Cleveland

ANNOUNCEMENT

The Consolidated Motor Car Co.

ROYAL TOURIST

CROXTON

Cleveland

Fully abreast of the 1911 Season, with the best manufacturing plant equipped to the last detail with the highest grade machinery for the turning out of a complete line of motor cars, taxicabs and trucks, The Consolidated Motor Car Company has an attractive offering to agents on limited sections in all parts of the country.

Here is our line—French rating:

FIFTEEN H. P. \$1500

Roadster, Toy Tonneau, Light Taxicab, Delivery Wagon

TWENTY H. P. \$2000

Fore-door, Five Passenger, Taxicab, Truck

TWENTY-FIVE H. P. \$2500

Fore-door, Five and Seven Passenger, Taxicab, Truck

THIRTY H. P. \$3000

Roadster, Fore-door, Seven Passenger, Taxicab, Truck

THIRTY-FIVE H. P. \$3500

Roadster, Fore-door, Seven Passenger, Truck

FORTY-FIVE H. P. \$4500

Roadster, Torpedo, Seven Passenger, Landulet, Limousine, Truck

The most comprehensive line of motor cars, taxicabs and trucks offered by any motor car manufacturer. Write or Wire for agency contract.

THE CONSOLIDATED MOTOR CAR CO.

ROYAL TOURIST

CROXTON

Cleveland



Little Chapters of Quality

Chapter the Fifth

A PRUDENT buyer, in selecting an article of preeminent value or utility, seeks the security of an established reputation.

For many years Timken products have held the confidence of the trade, maintaining supremacy in Quality, Style and Workmanship.

It makes no difference how good the car is, it can be bettered by the use of Timken-Detroit Axle quality axles.

We will gladly reply to any requests for information.

The Timken-Detroit Axle Co.

Detroit, Michigan, U. S. A.



COMBINATIONS

of clock and speedometer are more popular this season than ever.

Stewart Clock Combinations

have been adopted as standard equipment by a number of car makers who agree that it is the ideal equipment for their high grade cars.

The Stewart slow speed magnetic speedometer, compensated for temperature changes, combined with the famous Seth Thomas clock (rim wind, no key to fuss with), mounted on handsome bracket, equipped with electric light.

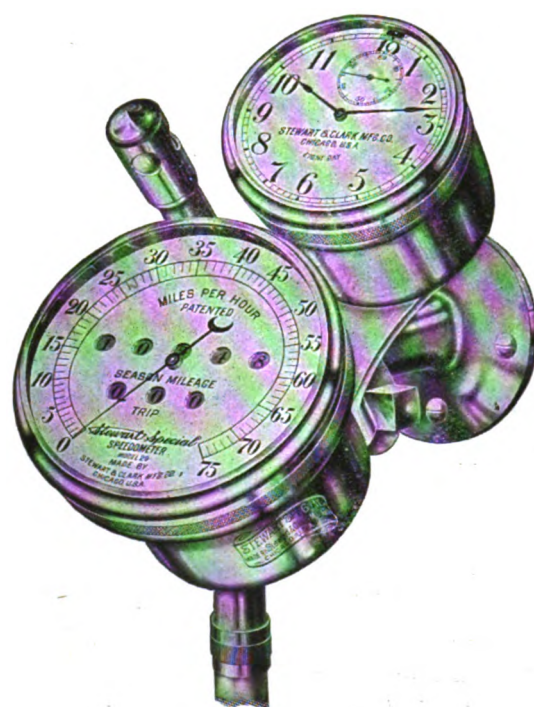
Built Right — Priced Right

Sold by Most Dealers Exclusively

Stewart & Clark Manufacturing Company

1828-48 Diversey Boulevard, Chicago, U. S. A.

Detroit: 1211 Woodward Avenue
New York: 1878 Broadway
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Speedometers \$15 to \$30
Clock Combinations \$45 to \$70
Guaranteed for Five Years

San Francisco: 307 Golden Gate Avenue
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The *VASCO* Wind Shield

Model 1—30 x 41.....	Full Channel Brass, formerly \$40.00.....	NEW PRICE, \$25.00
Model 3—30 x 41.....	Semi-Clear Vision, formerly 42.50.....	NEW PRICE, 25.00
Model 5—30 x 41.....	Full Clear Vision, formerly 45.00.....	NEW PRICE, 25.00
Model 2—30 x 43.....	Full Channel Brass, formerly 42.50.....	NEW PRICE, 27.50
Model 4—30 x 43.....	Semi-Clear Vision, formerly 45.00.....	NEW PRICE, 27.50
Model 6—30 x 43.....	Full Clear Vision, formerly 47.50.....	NEW PRICE, 27.50
Model 1912 41 inch.....	Fold in Middle, formerly 25.00.....	NEW PRICE, 15.00
Model 23	Zig-Zag Shield, formerly 30.00.....	NEW PRICE, 17.50

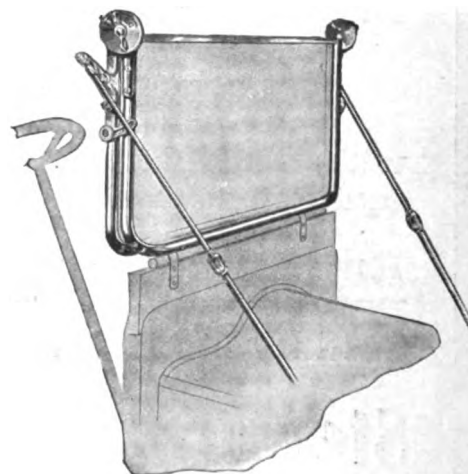
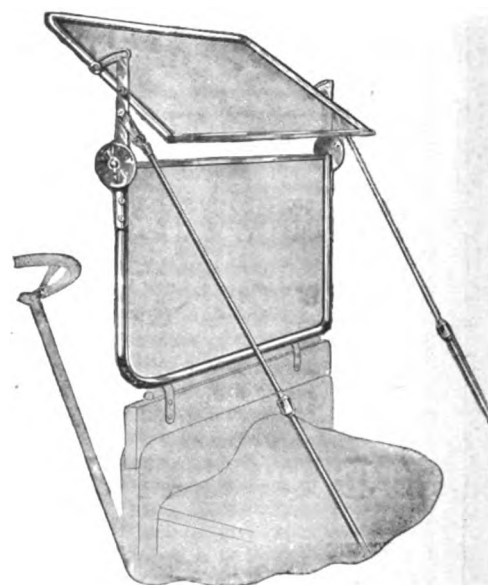
Our sweeping reduction of over 40% in list price of VASCO Wind Shields has established a new standard. A strictly high-grade product is now offered at a price asked for ordinary shields which are in no way comparable to the VASCO either in workmanship, finish or appearance and cannot possibly contain the many exclusive and individual features to be found only in the VASCO.

AUTOMATIC ONE HAND CONTROL—SIX DIFFERENT POSITIONS—SIMPLICITY OF DESIGN—ELEGANCE OF FINISH—ALWAYS DEPENDABLE—POSITIVE LOCKING AUTOMATIC FRICTION DISK—CAN BE LOCKED AT ANY ANGLE—FOLDS OVER HOOD WHEN DESIRED—CLEAR LINE OF VISION—NO SPRING CATCHES OR INTRICATE MECHANISM—CANNOT BREAK, RATTLE OR WORK LOOSE.

Since our new prices were announced we have received so many orders for immediate delivery that we cannot now guarantee shipment earlier than 15 days from date order is received at our office. We will, however, guarantee delivery of every shield within 15 days from date of order on all orders received prior to April 15th. If your dealer cannot supply you, the shield will be shipped direct, together with mahogany base-board and full instructions for attaching to car.

Dealers and Agents

Better write for our agency proposition to-day. VASCO Wind Shields are wonderfully quick sellers and our local representatives all over the country are reaping the benefit of our extensive advertising campaign, which, added to the great reduction in list price, will give you a monopoly on the Wind Shield business in your section. We have a splendid proposition for dealers and your territory may still be unallotted. Write to-day.



VICTOR AUTO SUPPLY MANUFACTURING CO., Inc.

39 West 43d Street, New York City

Distinctive Features of Medium-Priced Inter-State

40 H. P. Models

(Space does not permit of giving features of 50 h. p. models in this announcement.)

Bore of Motor $4\frac{1}{2}$ in.—Stroke 5 in.

1.—This $\frac{1}{2}$ -in. greater stroke gives more horsepower for lighter weight motor. 2.—Motor of longer life. 3.—Greater economy of gasoline. 4.—Less radiating surface. 5.—Smoother running, less noise. 6.—Reduced speed of action means reduced wear on bearings, valves, valve-stems, cams and crank shaft. 7.—Longer stroke also results in reduced temperature at exhaust valves. Thus, valve-grinding is exceptional. 8.—Increased compression and resultant economy of operation. 9.—Better mixture and vaporizing of charge; this gives greater flexibility; the motor can be throttled down to lower speed and a steadier, more quiet and smooth pull on hills.

Integral Clutch and Gearset Runs in Oil

(Found only in a few of highest priced cars.)

Greater rigidity and absence of friction—no loss of power, as clutch and gearset are of integral or unit design.

Power Transmission by Enclosed Propeller Shaft

No universal joints exposed to dangerous flying stones from wheels; no destructive sand or dust can work in crevices.

118 In. Wheel Base

2 to 8 in. longer than in cars anyways near price of Inter-State.

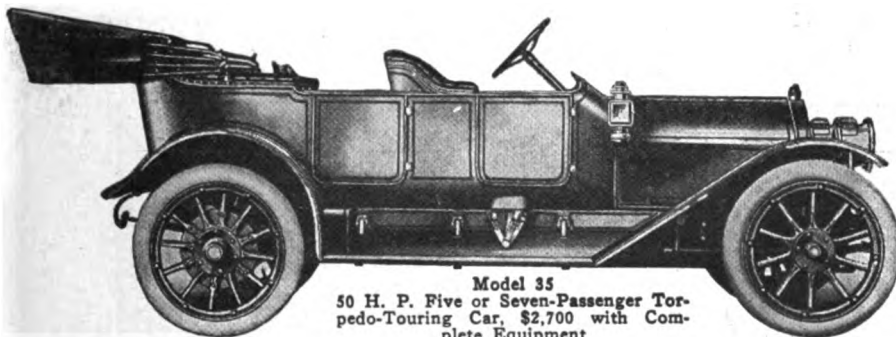
Wonderfully Easy Riding Springs

Front springs semi-elliptic, 40 and 42 in. long. Rear springs $\frac{3}{4}$ elliptic and 45 in. long.

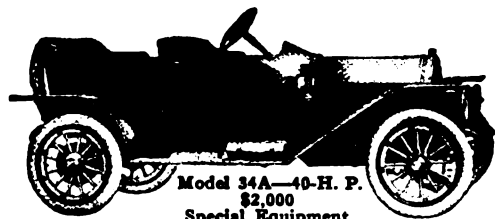
Proper Distribution of Weight

Owners reports of 10,000 to 15,000 miles of service to original tires are result of cars' lightness and even distribution of weight.

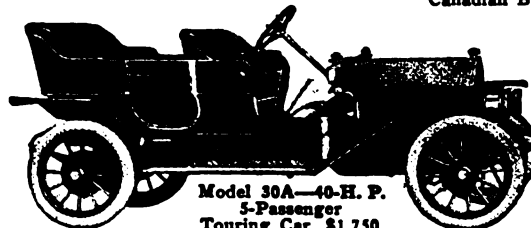
Inter-State



Model 35
50 H. P. Five or Seven-Passenger Torpedo-Touring Car, \$2,700 with Complete Equipment



Model 34A—40-H. P.
\$2,000
Special Equipment



Model 30A—40-H. P.
5-Passenger
Touring Car, \$1,750

50 H. P. Model

MOTOR. Most advanced T-head type with bore of $4\frac{1}{4}$ -in. and stroke of $5\frac{1}{4}$ -in. Valves, extra large size $2\frac{3}{4}$ -in., nickel steel heads and removable valve guides. Valve push rods have frictionless rolling contacts on cam shafts of $1\frac{1}{4}$ -in. diameter supplemented with fibre cushions in the adjusting screws assuring noiseless valve operation.

Distinctive features of greatest practical worth found in no other motor is the use of eccentric cam and pump shaft bushings, allowing exact meshing of timing gears. Three-point motor support obviates any possibility of twisting stresses from frame being received by motor. Pistons provided with four piston rings of $\frac{1}{4}$ -in. width. Connecting rods drop forged from best grade open hearth carbon steel—12-in. between bearing centers. Piston pin clamped immovably in connecting rod, with its bearing in the piston. Such construction permits longer bearing than in motors of this size—a total length of $3\frac{1}{4}$ -in. Connecting rod bearings are $1\frac{1}{4}$ -in. in diameter and $2\frac{3}{4}$ -in. long. Front crank shaft bearings are $1\frac{1}{4}$ -in. in diameter and $3\frac{1}{4}$ -in. in length; the rear crank shaft bearing 2-in. in diameter and $4\frac{1}{2}$ -in. long. White brass linings—no better quality bearing made.

Water pump of centrifugal type with extra long bearing, lubricated by means of grease cup.

Oil pump of distributing gear type driven directly from inlet cam shaft; mounted on rear end of crank case and so constructed that no stuffing box is needed. Oil supplied to three main bearings of crank shaft. Oil overflows from these into false bottom of oil pan, is splashed over interior surfaces of crank case, cylinders and pistons. (Automobile Topics, N. Y., Feb. 25, says of this oiling system: "The automatic oiling system used in connection with the '50' Inter-State motor, for example, is ingenious and thoroughly dependable.")

Reducing or half time gears provided with spring actuated device to remove all back lash in gears, giving positively noiseless timing gears.

Imported high tension magneto—eliminating troublesome induction coil. Motor will start with quarter turn of crank when previously run enough to warm up.

Water connections and intake manifold of brass tubing. Only two rubber connections in the entire water circulating system; these lead to the two connections on the radiator.

Fly wheel 16-in. diameter—larger than is used for motor this size—gives superb auxiliary cooling systems.

Enclosure of wiring in fibre tubes, supported by cast brass brackets of handsome design.

Ten inch diameter multiple disc clutch, running in oil bath, bronze discs, supplied with cork inserts; friction surface, cork against steel. (Multiple disc oil-bath clutch, used by highest priced cars manufactured.)

Gearset and clutch, unit construction, two compartments, separated by oil type retaining wall, allowing use of different and suitable oils for gearset and clutch. Transmission of selective sliding type, gears of exceptional strength and heavy pitch, clashing gears of chrome vanadium steel, scientifically hardened to minimize wear. Three speeds forward, one reverse. All gears run on highest grade imported annular ball bearings.

Gear ratios, approximately 3 to 1 on high; 5 to 1 intermediate; 9 to 1 on low speed; 12 to 1 on reverse, giving most practical and satisfactory speed regulations under all conditions.

Rear axle, full floating with differential gears of chrome-vanadium and high carbon steel, so supported in housing as to permit their removal intact, for adjustment. Generously proportioned nickel steel axle shaft. Driving shaft, nickel steel, enclosed in torsion tube. The enclosed shaft eliminates torsion bars and distance rods—positively insures correct alignment of propeller pinion shafts at all times. Every possible adjustment and positive locks on axle to insure permanency. Front and rear wheels mounted on annular ball bearings, so assembled and provided with bushings that should bearing ever become defective, weight of car will be carried on bushings until new bearings can be fitted.

Brakes—far in advance of general practice. Both service and emergency brakes internal expanding, dirt and water proof type. Noiseless in operation. Either brake sufficiently positive to lock wheels.

Steering Gear is quickly and easily adjusted and designed with maximum degree of safety for every possible road condition; provided with large ball thrust bearings to compensate for end thrust.

Vanadium steel springs, front 40-in. in length, $2\frac{1}{4}$ -in. wide; rear, 48-in. long, $2\frac{1}{4}$ -in. wide.

Frame is pressed steel, channel section, heat-treated after forming, provided with four cross members insuring perfect alignment and yet flexible to conform to every condition of road service.

Wheel Base is 124-in., Tread 56-in.

COMPLETE EQUIPMENT—includes silk mohair top, windshield, speedometer, clock, black enameled Solar gas headlights of large size. Combination oil and electric side lamps and tail lamp, storage batteries for lighting. Robe and foot rail, tire irons, large well filled tool box, extra demountable rim, Prest-O-Lite tank and horn.

New Catalog Crammed With Information. Send for it. Use coupon below. It will bring you the new attractive catalog.

Inter-State Automobile Co. Muncie
Canadian Branch: Hamilton Machinery Co., Hamilton, Ontario.

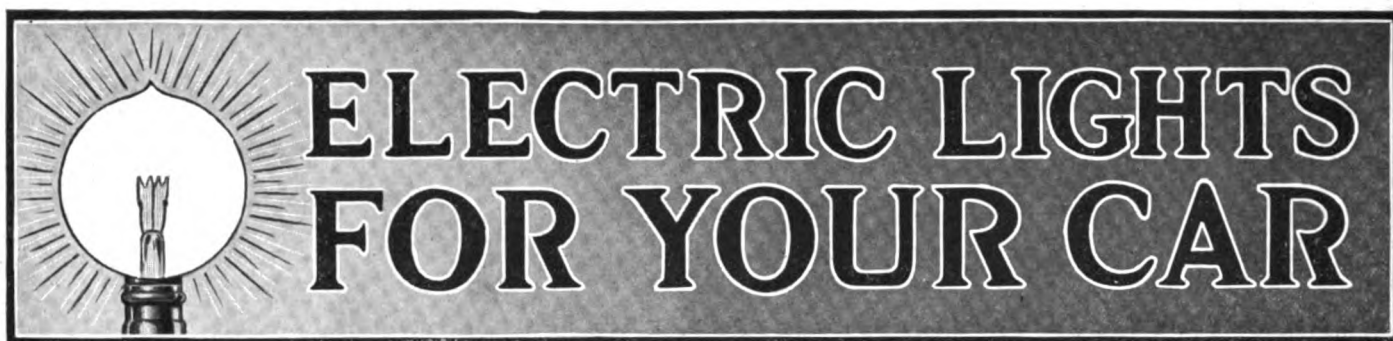
REMINDER

Inter-State Automobile Co. (M. W. 323)
Muncie, Indiana

Send me new catalog your "40" and "50" models.

Name

Address



Investigate This Automobile Lighting Dynamo

Just as efficient and just as easy to operate, as the electric lighting system in your home or office.

GRAY & DAVIS Lighting Dynamo

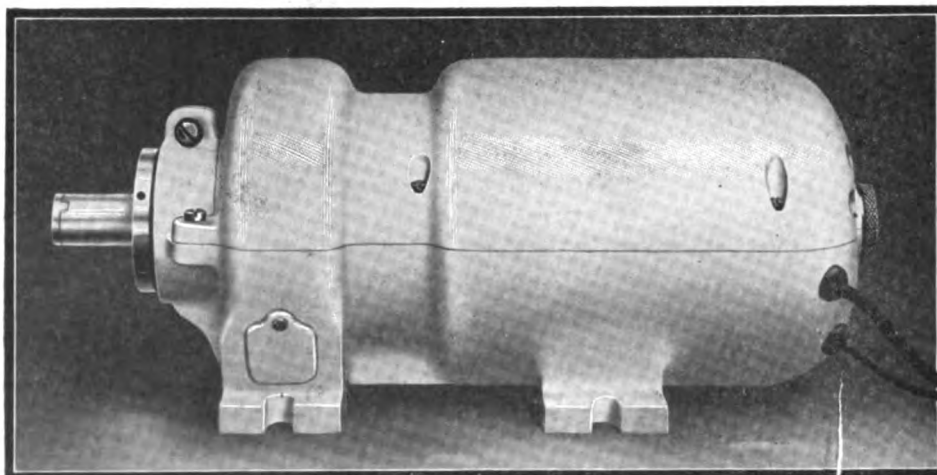
Provides inexhaustible current for your lamps, charges your batteries and operates power horn. It will also furnish current for a 16 c.p. inspection lamp.

No automobile is completely up-to-date without this system.

You will want this dynamo for your car. It favors the battery, by putting in a tapered charge. It is cooled by forced draught. Favors the lamps (an exclusive feature), lights one or all your lamps without battery connection. Shunt Wound when charging batteries. Compound Wound when lighting lamps. Constant Speed.

Write us today for our very interesting catalog.

GRAY & DAVIS Manufacturers of Automobile Lamps **Amesbury, Mass.**



THE ATWATER KENT SYSTEM

What It Is and What It Does

THE ATWATER KENT ignition system is embodied in two forms, the Spark Generator and the Unisparker. In the former, the entire apparatus—contact maker, coil and distributor—is built in one case which is mounted on the dash board and driven by an extended shaft from the motor. It is usually supplied as stock equipment by the car manufacturer, who provides for the drive in designing the engine. It offers special conveniences in the way of testing individual cylinders, etc., and the complete system is under the direct observation of the driver.

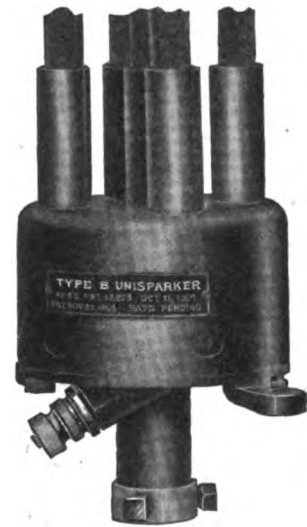
In the Unisparker the contact maker and distributor form one element, mounted preferably vertical on the timer shaft of the engine. A simple, non-vibrating high tension coil is contained in a separate case conveniently located. The spark time is advanced or retarded in the same manner as the ordinary timer or commutator.

The vital feature of either device is the contact maker, which takes the place of both the timer and vibrating coils of the ordinary battery system. By means of a unique mechanical movement a single hot spark is produced for each explosion. The heat of this spark is entirely independent of the speed of the motor.

The contact is positively timed and lasts only long enough to induce a strong, high tension current in the secondary winding of the coil. The remarkable current economy of the Atwater Kent system is due to the brevity of this contact.

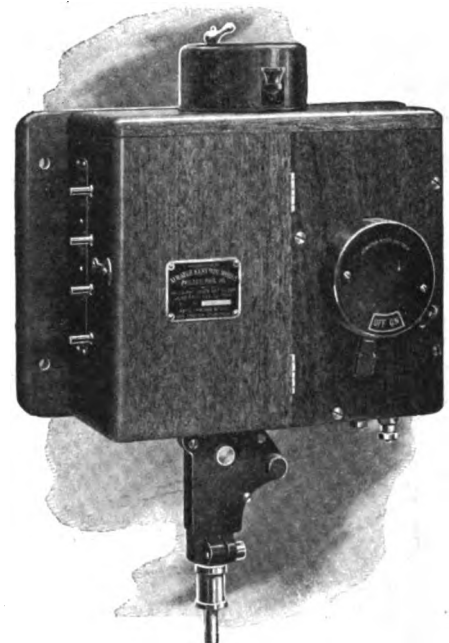
The Unisparker is made for engines of from one to six-cylinders and may be installed on almost every standard make of car or motor. In ordering, the diameter and direction of rotation of the timer shaft should be given. State whether the timer shaft rotates clockwise or counter-clockwise when looking at the end on which the Unisparker will be installed.

Write now for descriptive matter and prices.



Type "B"

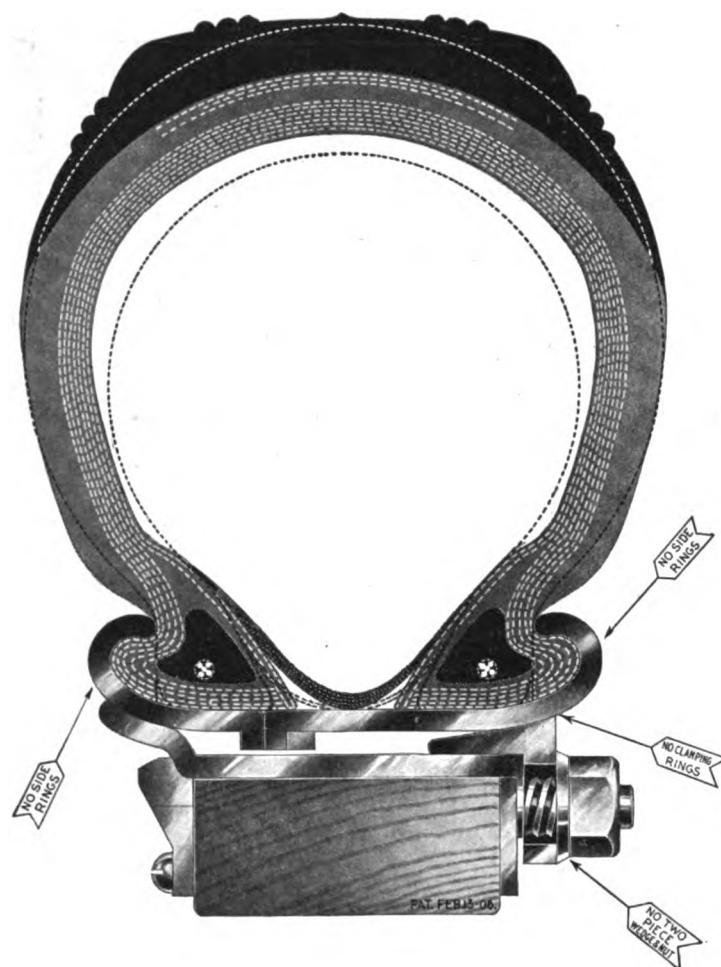
UNISPARKER



Spark Generator

ATWATER KENT MFG. WORKS

33 NORTH SIXTH ST., PHILADELPHIA, PA.



More motorists are today selecting Continental Demountable Rims (United Rim Co. Standard Universal Rim No. 3) than all other Demountable Rims on the market taken together.

UNCLE SAM



U.S. BUREAU OF STANDARDS

SETTLES THE SPEEDOMETER QUESTION

There are two kinds of speed indicators—the JONES kind, which is mechanically accurate and the magnetic kind, which is subject to variations as high as 28 degrees between extreme heat and cold.

Read what the U.S. Bureau of Standards says about the Jones:

Department of Commerce and Labor
BUREAU OF STANDARDS
Washington

February 7, 1911.

Jones Speedometer Co.,
New Rochelle, N. Y.

Gentlemen:

The following are the results of the tests on your speedometers Nos. 197868 and 197680. These figures are the mean of three runs at 70°F. and are given to the nearest half mile.

SPEEDOMETER		TRUE SPEED
197868	197680	
m. p. h.	m. p. h.	m. p. h.
10	10	10
15	15	16
20	20	20
25	25	25
30	30	30
35	35	35
40	40	40
45	45	45
50	50	50
55	55	55
60	60	60

We wish to thank you for your courtesy in furnishing us with these instruments. We are returning same by prepaid express.

Respectfully,

[Signed] S. W. STRATTON,
D. E. D. Director.

Read what the U. S. Bureau of Standards says about the magnetic type:

Extract from Army and Navy Journal:

"Magnetic Speedometers used by automobiles to register speed, are SO INACCURATE AS TO MAKE THEM PRACTICALLY USELESS, as is demonstrated by an investigation just completed by the Bureau of Standards. The Bureau of Standards, after a thorough investigation, reports that the magnetic instruments show a variation during hot and cold weather of twenty-eight per cent."

Extract from Report of Columbia University:

"Magnetic type instrument. The variation in the reading per degree change of temperatures 27%. When used in a car the variation in the temperature of the speedometer between summer and winter is likely to be as much as 62°F. which would mean a DISCREPANCY OF TEN MILES PER HOUR BETWEEN SUMMER AND WINTER readings when actually going 60 miles per hour; a discrepancy of 5 miles per hour when actually going 30 miles per hour."

Extract from Report of Armour Institute of Technology:

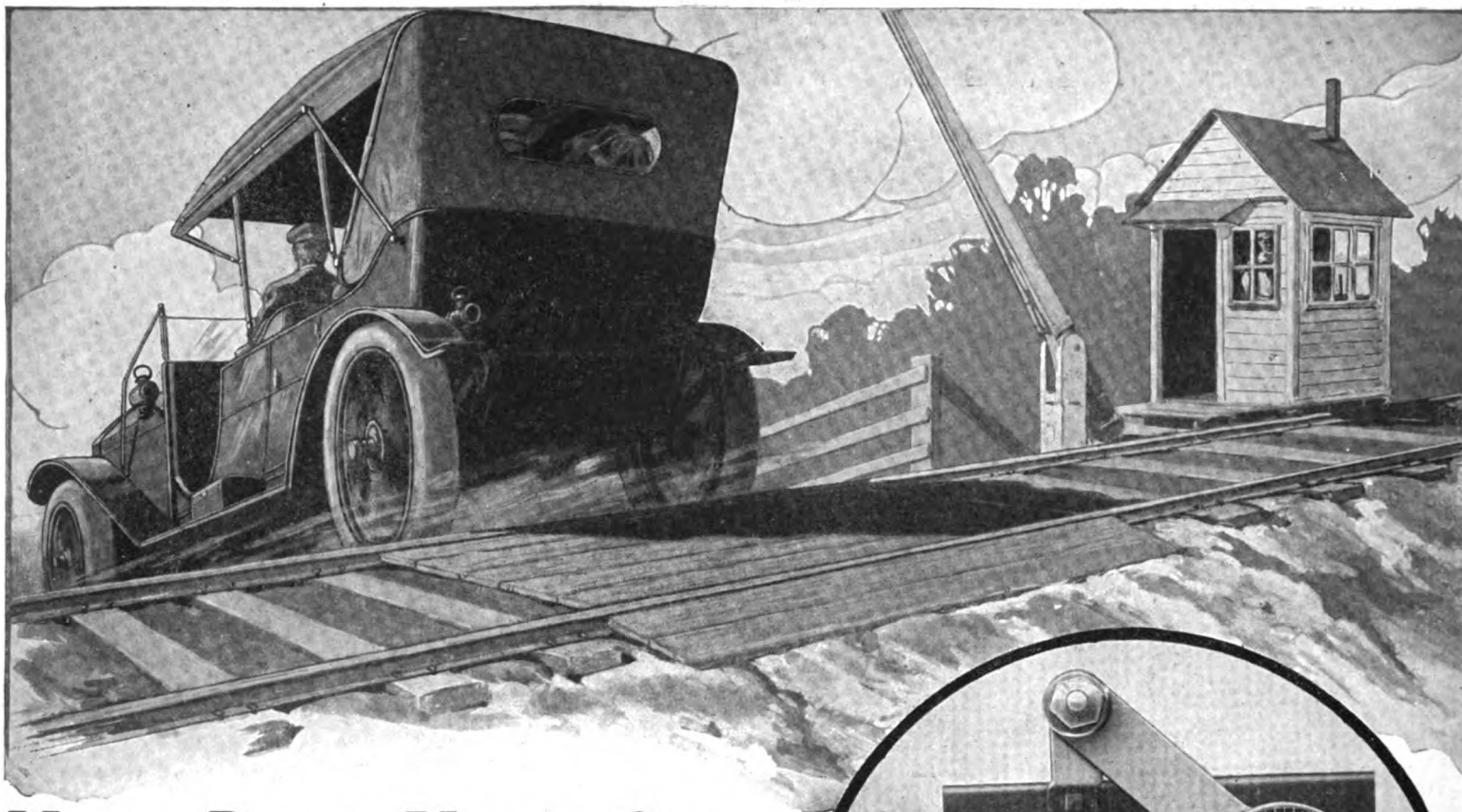
"The tabulated results show that an uncompensated MAGNETIC SPEEDOMETER VARIES UNIFORMLY WITH THE TEMPERATURE. This variation computed on the basis of a change of 100°F. amounts to more than 22%. Such an instrument, if calibrated at 75°F., would read about 5.5% lower at 100°F., which would be about 2 3/4 miles slow at a speed of 58 miles per hour. At 0°F. the speedometer would read 16.5% high, or 8 3/4 miles fast at 50 miles per hour. At 25 miles per hour the error would be half as large."

WHICH DO YOU WANT, THE JONES OR THE OTHER KIND?

The Report of the U. S. Bureau of Standards verifies the tests made by the leading Universities and eminent engineering authorities. They ALL acknowledge the superiority of the JONES.

JONES SPEEDOMETER Dept., United Manufacturers
250 West 54th Street, New York





How Does Your Car Stand the Racket?

Every time a 3,000-pound car, at a 20-mile speed, meets a road-bump 2 inches high (such as an ordinary crossing) it receives a blow of over 4,000 pounds!

How do cars stand the racket? The answer is this: **They don't.**

Compare the swift depreciation of an automobile with the long, useful life of a locomotive. The automobile is constantly hammered and banged. The locomotive is never jolted at all.

The worst part of the punishment your car receives is avoided by the

Truffault-Hartford **SHOCK ABSORBER**

These Shock Absorbers take the sting out of jolts and jars. They perform no miracles. They won't make your car last forever. But it's a fact that they actually reduce depreciation **one half.**

They keep your car on the ground. They save their cost over and over on repairs alone. And they double the life of your tires.

Besides, they make even bad roads seem smooth.

These are the reasons why 22 leading cars now include Truffault-Hartfords in their regular equipment. People who know refuse to buy or to use a car without them.

HARTFORD SUSPENSION COMPANY

EDWARD V. HARTFORD, President

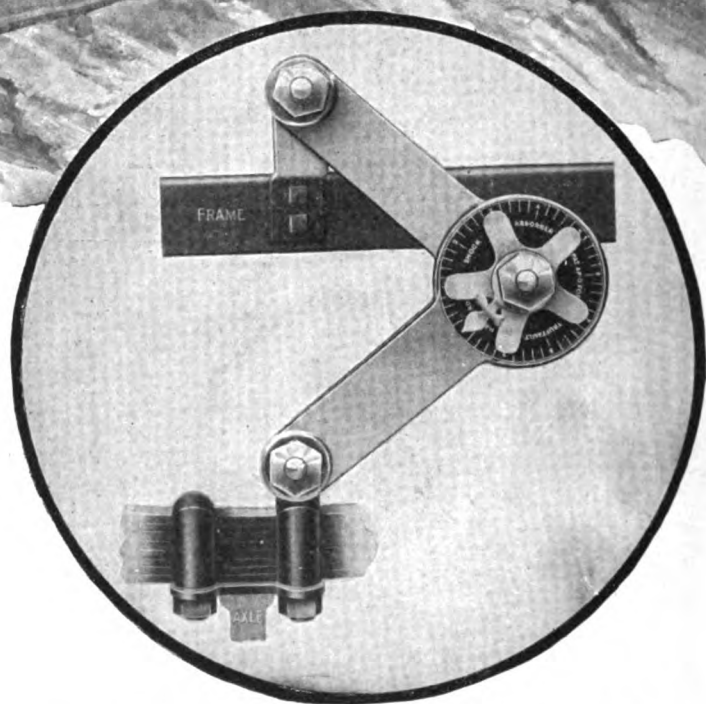
164 Bay Street

New York, 212-214 W. 86th St.
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JERSEY CITY, N. J.

Boston, 319 Columbus Ave.
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Newark, 289 Halsey St.



We've a New Catalog for YOU

Write for a free copy of our New Catalog. Just off the press and ready to show you the way to real motoring comfort. Beautifully illustrated and interestingly written. Write for a copy today.

Truffault-Hartford Models

Standard for cars over 2500 lbs. per set of four...\$60
Intermediate for cars from 1800 lbs. to 2500 lbs...\$45
Junior for smaller cars weighing 1200 lbs. to 1800 lbs.\$25
Juniorette for small cars like the Ford, AA Maxwell, Hupmobile, etc.....\$15

THE Hartford Auto-Jack **"A CRACKERJACK"**

With its *short* stroke and *long* leverage, it turns *man's* work into *child's* play. 30 pounds pressure on this Jack out-lifts 90 pounds pressure on an ordinary Jack. Built to last. To buy any other Jack is a mistake.

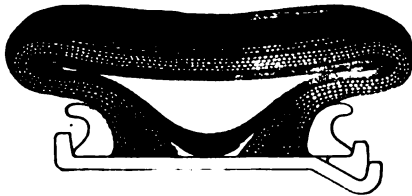


No-Rim-Cut Tires Outsell Our Clincher Tires 6 to 1 Today

We have sold already half a million Goodyear No-Rim-Cut tires.

Last year our tire sales trebled—jumped to \$8,500,000. Yet No-Rim-Cut tires, until lately, cost one-fifth more than standard clincher tires.

This year—at an equal price—No-Rim-Cut tires outsell our clincher tires almost six to one. And 64 leading motor car makers have contracted with us for these tires.



No-Rim-Cut Tire

The day of the clincher is ending, because No-Rim-Cut tires save half. Goodyear No-Rim-Cut tires fit any standard rim—any demountable rim—just as do clincher tires. But you turn the removable rim flanges outward—as shown in the picture. The tire comes against the rounded edge and rim-cutting is made impossible. We have run these tires deflated as far as 20 miles without the least rim-cutting injury.

10% Oversize

With the rim flanges turned outward, the flare of the tire begins right at the base of the rim. So we can make No-Rim-Cut tires 10 per cent larger than clincher tires, and fit the same rim.

GOODYEAR
No-Rim-Cut Tires
With or Without Non-Skid Tread

We give you this extra size without extra cost. That means 10 per cent more air—10 per cent more carrying capacity. And that, with the average car, adds 25 per cent to the tire mileage.

This clincher tire, until lately, was the almost universal type. The tire base has hooks, and the removable rim flanges are turned to curve inward—to grasp hold of these hooks. That's how the tire was held on.



Ordinary Clincher Tire

Note how those thin flanges dig into the tire. That is what causes rim-cutting. That is how a punctured tire is often wrecked in a moment.

We have made these hooks unnecessary by inventing an unstretchable tire base. We vulcanize into the base 126 braided piano wires. The tire can't be forced off. No hooks and no tire bolts are needed.

As the tire is inflated these braided wires contract. The tire is then held to the rim by a pressure of 134 pounds to the inch. This is our patent—a feature which we control. It gives us what the whole motor world has wanted—a tire that can't be rim-cut.

Goodyear No-Rim-Cut tires—10 per cent oversize—now cost the same as standard clincher tires. They avoid rim-cutting entirely, and they avoid overloading. These two savings together cut tire bills in two. Motor car owners who know these facts are demanding No-Rim-Cut tires.

Ask for our latest Tire Book.

THE GOODYEAR TIRE & RUBBER COMPANY, Arthur Street, AKRON, OHIO

Branches and Agencies in All the Principal Cities.

Canadian Factory: Bowmanville, Ontario

Main Canadian Office: Toronto, Canada

We Make All Sorts of Rubber Tires (115)

Marion

A Combination of Everything That's Best

The MARION is not a one feature car. It has not one or two things which we continually shout about. No one man can point to it and say "That's my conception." MARION represents the work of a thousand men—the best engineers and designers in the trade.

And MARION owners realize this fact. They come in contact with it every day when they see the pleasure and joy the exceptionally fine service their MARION is giving them. Did you ever stop to figure out what really makes a car worth while? It's not its speed nor the fact that it has a pair of fore doors or not—it is the reliability that counts.

The MARION is a reliable car for every part of its construction is the very best that has ever been produced. We make what we can make the best and we buy from others those parts which they can make the best.

The MARION is an economical purchase. Let us prove this. Look up the MARION dealer—we will send you his name and a MARION book.



MARION "45"
\$1700

THE MARION SALES COMPANY
Indianapolis, Ind.

Overland

45 Cents a Day to Run and Keep the Overland

Indianapolis, Ind.
OVERLAND AUTO CO., Toledo, Ohio.

Gentlemen:—When I talked of buying an automobile more than a year ago there were many very important questions that no one was prepared to answer. They were concerning the upkeep of the machine. I have kept a careful tabulated account of my year's expense, and am glad to furnish you with this information.

With the exception of ten days sickness last winter, my machine has been run as a physician runs a machine in his practice scattered all over the city, besides taking many pleasure rides of evenings and some Sunday rides to adjoining country towns.

My gasoline cost me for the year.....	\$59.67
Lubricating oil	8.65
Transmission grease	2.63
Anti-freeze fluid	3.25
Battery cells	4.25

This makes for the year an average of 21¼c. per day for actual running expenses.

Other expenses, including all supplies and mending tubes, tires, patches, etc., as well as licenses and all expenses connected with owning a machine, cost an additional 23¼c. per day, making a total of 45c. per day. I have not heard of any car that compares with the Overland in economy for up-keep.

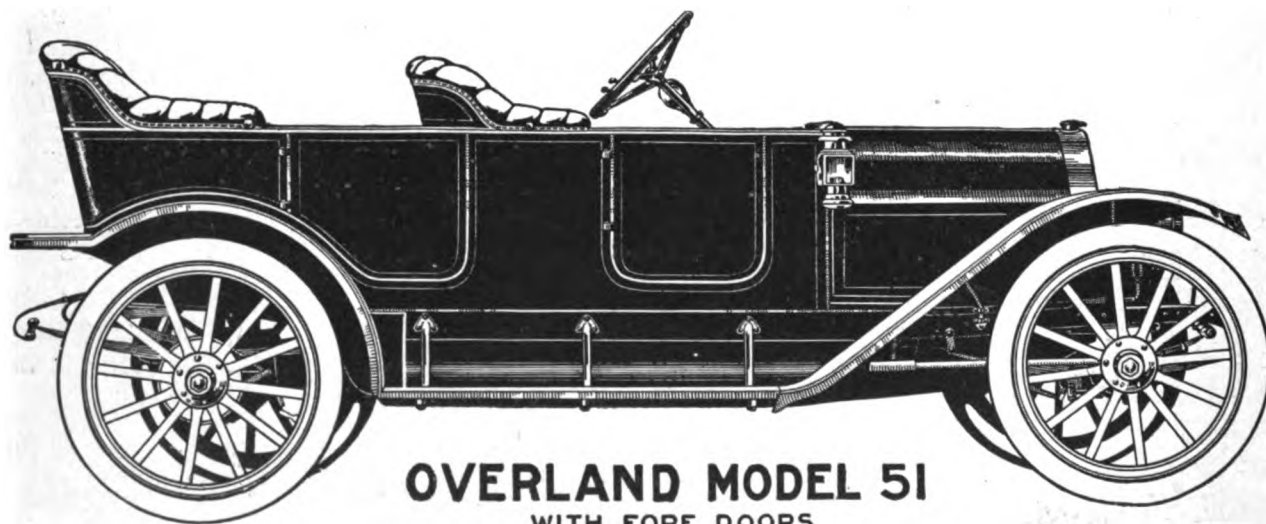
Yours for the Overland,
W. R. STEWART, M. D.

It is, of course, impossible for any manufacturer to say how much it will cost an owner to operate his car. There is a wide range of difference in conditions and in drivers. The very nature of Overland manufacturing methods insures a car that must perform be efficient, reliable and economical. We know from our own experiments and from the actual experience of Overland owners that it offers the greatest automobile value when purchase price is considered and that it can be operated and maintained at less cost than any car of similar rating. We make five models, all with high duty, quiet, four cylinder motors, from 20 to 40 horsepower. There are twenty-two body styles, priced from \$775 to \$1675.

This car shown below is Model 51, with fore-doors and centre control, that is to say the shifting lever and emergency brake lever are inside the car in the centre at the left of the driver. Notice on other fore-door makes the levers are outside, proving that the body is patched up with the fore-doors to meet the latest ideas.

Model 51 has a thirty horsepower, four cylinder motor that is a marvel of efficiency, quietness and reliability. Dual ignition, magneto and battery, 110 inch wheel base, seats five people, tires 34 x 3½ in., three speeds forward and reverse, selective type transmission. Brakes internal expanding and external contracting on rear axle drums.

Get in touch with the OVERLAND dealer nearest you and compare this car with others. Write for Catalog 1.



OVERLAND MODEL 51
WITH FORE DOORS

THE WILLYS-OVERLAND COMPANY, Toledo, Ohio



WORM GEAR BEGINS TO LOOM LARGE

Manufacturers Who Are Said to be Experimenting with It—Flanders Obtains Control of Foreign Patents.

To what extent, the worm drive will figure in the automobiles of next year and the years thereafter is one of the questions that now are confronting the trade. That that form of transmission has been receiving increasing attention has been apparent for some time, but the impression has prevailed that such attention has centered chiefly on the application of the worm gear to commercial vehicles, although it has been known that a few manufacturers, notably the E. R. Thomas Motor Car Co. and the E-M-F Co., were trying it out on pleasure cars also.

According to a man from the West, who was in New York during the current week, the number of those who are engaged in similar experiment is much greater than is supposed to be the case even by those familiar with the inside workings of the industry. Claiming to know whereof he spoke, he named practically all the older and better known makers who, he said, have obtained worm geared hubs or axles which they are putting to the test on touring cars. In addition to Thomas and E-M-F, among those whom he placed in this category were the producers of such cars as the Pierce, Packard, Olds, Cadillac, Chalmers, Hudson, Buick and Elmore.

The fact that these manufacturers are trying out the worm does not necessarily presage their adoption of it, but that it constitutes a significant trend is undoubted. Further significance is contained in the information which leaked out this week that the Flanders Mfg. Co., of Pontiac, Mich., has secured the American rights to produce and use the machinery employed in the cutting of an English worm for which particular advantages are claimed, there being no patents on the gear itself.

Robert M. Brownson, president of the Flanders company, recently made a quiet visit to England and closed the necessary contracts, and the company shortly will be in position to supply the American trade with either the hubs or the axles or the machinery for making them. As the Grant & Woods machine and tool plant in Chelsea, Mich., and the Vulcan Gear Works in Pontiac are integral parts of the Flanders Mfg. Co., it is well situated to perform either service. Pending the building of the gear cutting machines in this country, several of them have been imported and as a result there will be no loss of time in meeting any demand that may arise.

Mosler Acquires the Breech Block Plug.

A. R. Mosler & Co., of New York, manufacturers of the well-known Spit Fire plug, have purchased from The Standard Co., Torrington, all rights and title to the Breech Block spark plug, which includes an exclusive license to manufacture it. After the Standard Co. has completed contracts made previous to the arrangement with Mosler & Co., the latter will control the manufacture and sale of the plug exclusively.

Macks May Build Trucks in California.

According to reports from San Francisco, the Mack Bros. Motor Car Co., of Allentown, Pa., are seeking a site on the Pacific Coast where they purpose establishing a branch factory for the manufacture of trucks and other commercial vehicles. J. W. Mack himself recently visited Richmond, Cal., and inspected advantages which that town offers.

Alco to Open South American Branch.

The American Locomotive Co. is preparing to invade the South American market in real earnest. The first move in that direction will be the establishment of a branch in Buenos Aires. Alfred Commancho sailed on Tuesday last to perform this mission. He took with him both a four-cylinder and a six-cylinder Alco touring car.

"LEAGUE" ENJOINED AND FINED

Imitating Rajah Spark Plugs Gets Buffalo Institution into More Trouble—Must Pay \$250 for Contempt.

In the New York Supreme Court for Erie county, Judge Pound, on the 13th inst., found the so-called International Automobile League, of that city, guilty of infringing the registered trade mark Rajah and of unfair competition in selling infringements of the Rajah spark plug, and accordingly ordered that a permanent injunction be issued. On the same day, in another branch of the same court, Judge Brown fined the peculiarly constituted league \$250 for contempt of court because of its violation of the preliminary injunction restraining it from such infringement and such unfair competition.

Both actions were brought by the Rajah Auto Supply Co., of Bloomfield, N. J. The charges of infringement and unfair competition were filed last October, at which time Judge Woodward granted the preliminary injunction. The contempt of court consisted of failure to obey this preliminary injunction, the proof of which was obtained by Emerson R. Newell, the attorney for the Rajah company. Being present in Buffalo to argue for the issuance of a permanent injunction, he dropped into the shop of the so-called International Automobile League in that city and the unsuspecting salesman promptly sold him the imitation Rajah plug which he sought to purchase. The plug was produced in court and Judge Brown lost no time in inflicting the maximum punishment, a fine of \$250, which in such cases goes to the plaintiff instead of to the court. Mr. Newell also submitted, as additional evidence of violation of the injunction a catalog of the International Automobile League in which was reproduced a mutilated cut of the Rajah plug, which reproduction also was contrary to the language of the injunction, which,

among other things, forbade the alleged league from reproducing advertising matter having to do with the imitation Rajah.

The Rajah company is making a determined effort to protect its name and its property, and is understood to have in view the prosecution of several other offenders who, apparently, are not aware that the law holds it to be unfair competition to unnecessarily imitate the shape and outward appearance of a competitor's device in such a way that the ordinary purchaser may be deceived.

To Concentrate Overlands in Toledo.

The Willys-Overland Co. has sold to interests represented by W. S. McDonald, of Detroit, the Overland plant in Indianapolis known as the "Fifteenth street plant" in which the engines for such of the over- were produced. McDonald, who has been identified with the Buda Company of Chicago, is a member of the new \$300,000 Motor & Mfg. Co., which will continue to operate the plant in making engines and transmissions for the trade at large. The sale marks the first step in the concentration of Overland manufacture in the big main factory in Toledo, which move President Willys always has had in view. The Drover street plant in West Indianapolis where certain of the Overland models and all of the Marion cars have been built, will be given over wholly to the Marion interests, all of which are owned by Mr. Willys, although a separate sales organization has been maintained. The concentration of the Overland business in Toledo naturally will give the Marion more room for expansion and at the same time it will permit of certain economies and remedy some inconveniences which have been experienced. The Toledo plant again will be enlarged to render these things possible and the necessary additions and changes already having been inaugurated, will be completed long before the 1912 season arrives.

To Build Saurer Trucks in America.

The Saurer Motor Truck Co., which recently was organized under the laws of New Jersey with a capitalization of \$1,600,000 to take over the American interests of the Swiss truck of that name, has completed its organization by electing the following officers: President, C. Philip Coleman, formerly secretary and treasurer of the Singer Sewing Machine Co.; treasurer, Frank S. Richardson; secretary, Vernon Munroe. Directors, William D. Sargent, president of the Reading Steel Casting Co.; Frederick H. Eaton, president of the American Car and Foundry Co.; Charles H. Sabin, vice-president of the Guaranty Trust Co.; Otis H. Cutler, president of the American Brake Shoe and Foundry Co.; W. G. Pearce, vice-president of the same company; Benjamin Strong, Jr., vice-president of the Bankers' Trust Co.; Arthur H. Lockett, of

Pomroy Brothers, bankers; Hunter Marston, of Blair & Co., bankers, and George B. Case, of White & Case, attorneys. The Saurer company has secured a plant in Plainfield, N. J., where the three, five and seven ton trucks, which hitherto have been imported, will be reproduced.

Consolidated Offers Bonus With Stock.

Announcing that the business "will be run on a basis of coffee and rolls for breakfast instead of champagne and cake," the Consolidated Motor Car Co., of Cleveland, O., which represents the merger of the Royal Tourist and the Croxton companies, and which is capitalized at \$4,000,000, is offering at public sale \$250,000 of the \$2,000,000 7 per cent. preferred stock with each share of which will be given a bonus of one share of common stock. Nearly one-half of both stocks, it is stated, has been used in acquiring the constituent properties.

The balance sheet of the Consolidated company, which is as of March 1, 1911, makes the following presentment:

Assets.

Stock of Royal Tourist Car Co. owned, and stock of Consolidated company, held to complete exchange for Royal stock (at cost)	\$753,000
Stock of Croxton Motor Co. (cost)	753,000
Stock of Acme Veneer & Body Co. (cost)	87,000
Advertising fund	100,000
Preferred stock in treasury	1,231,500
Good will of constituent companies, represented by the issuance of common stock	1,468,500
Total	\$4,000,000

Liabilities.

Preferred stock	\$2,000,000
Common stock	2,000,000
Total	\$4,000,000

"International League" Sued for \$100,000.

If the suit filed in the Illinois Superior Court in Chicago on Monday last, 20th inst., by Daniel C. Beard ever comes to trial, more light probably will be thrown on the methods of the so-called International Automobile League, of Buffalo, N. Y., against whom Beard's suit is directed. He wants \$100,000 as damages for alleged slander, defamation of character, etc., committed by the "league," after he left its employ as Western representative. At that time he became manager of a rival concern which took a fancy to adopt a very similar and conflicting title, viz., International Automobile League of America. The Buffalo institution then caused to be printed and circulated a circular, he says, which charged that he was an imposter and had been discharged for misappropriating funds. It was headed: "\$1,000 Reward! Beware of an impostor!" As a result of this poster, Beard was arrested in Waterloo, Iowa, but

although the Buffalo "league" was notified, he was released the next day. So far as known the Waterloo police have not received the \$1,000 reward; but Beard apparently believes that he can collect at least some part of the \$100,000 for which he sues.

Big Suit for Rubber Not Delivered.

An echo of the days when the price of rubber of all kinds was making strides towards the dazzling heights it finally attained was heard on Saturday last when the Sheriff of New York County received an attachment for \$207,654 against the Mexican Crude Rubber Co., of Detroit, in favor of Thomas S. Lindsey, on an assigned claim of the Diamond Rubber Co., of Akron, Ohio, for alleged breach of contract for failure to deliver a quantity of rubber according to specifications.

It was stated that a contract was made between the companies on March 7, 1909, for 750 tons of guayule rubber at 32 cents a pound. Up to December 22, 1910, 169 tons were delivered, and there is a balance of 281 tons yet to be delivered. Since the contract was made the price of rubber has gone up from 32 cents to 65 cents a pound, and the difference, 33 cents on 629,259 pounds, makes \$207,654.

The attachment was granted on the ground that the Mexican Rubber Co. is a Michigan corporation.

Fosdick to Direct Stevens-Duryea Sales.

Harry Fosdick, one of the veterans of the trade, has been appointed sales manager of the Stevens-Duryea Co. His appointment foreshadows a complete reorganization of the company's sales department. Fosdick has been actively identified with the industry since 1899 and has had ripe experience as an agent, importer and branch manager. Several months ago he became sales manager of the Fiat Automobile Co., of Poughkeepsie, N. Y., which position he resigned to accept the Stevens-Duryea berth. The vacancy in the Fiat establishment has been filled by the promotion of H. T. Clinton, manager of the Fiat branch in Chicago. For the time being, he will perform the duties of sales manager in the Chicago office. Before going with the Fiat company, Clinton was for several years advertising manager of the Association of Licensed Automobile Manufacturers.

Duryea Seeking a New Factory Site.

Charles E. Duryea is preparing to leave Reading, Pa. The demand for that veteran's ingenious motor buggy has grown to such proportions that his quarters in Reading no longer will serve. Accordingly he is preparing to move elsewhere. Reports from Port Huron, Mich., stated that he would locate there but the reports are premature. He is dickering with Port Huron but has a couple of other places also in view.

STORAGE BATTERY SWELLS SURPLUS

Big Company Presents Annual Statement Showing Its Condition—Preferred Stock Being Converted into Common.

According to its annual statement for the year ending Dec. 31, 1910, which was issued last week, the Electric Storage Battery Co., of Philadelphia, then had available for dividends the sum of \$1,120,012, equivalent to 6.9 per cent. on the \$16,249,425 outstanding common and preferred shares. This compares with \$933,492 and 5.8 per cent. in 1909, \$636,580 and 3.9 per cent. in 1908 and \$821,275 or 5 per cent. in 1907.

After paying 1 per cent. quarterly or 4 per cent. on both the common and preferred amounting to \$649,964, a net surplus remained of \$470,048. With this the final surplus Dec. 31, 1910, became \$2,771,942, an equity of 17 per cent. on the outstanding stock. Besides the company has accumulated a reserve account of \$361,746.

Nominally the company has issued \$18,000,000 stock of which \$17,814,600 is common stock and \$185,400 is 1 per cent. cumulative preferred. Of the common stock, \$1,750,575 is held in the treasury as treasury stock.

While the preferred stock is 1 per cent. cumulative it shares equally with the common in dividend distribution and is being gradually converted into common stock. From 3,000 to 5,000 shares are converted yearly. Last year 4,500 shares were converted.

No figures of gross earnings are given by the company, which so far as the automobile trade is concerned is best known because of its Exide battery, which once dominated the electric vehicle business but which has ceased to do so since the Edison battery was placed on the market.

In the matter of working capital the company's condition is shown by the following tabulation:

	1910	1909
Cash	\$535,145	\$614,608
Accounts receivable	744,645	893,786
Notes receivable	37,904	70,577
Material and supplies.....	1,276,971	1,092,670
Less accounts payable....	58,035	36,283
Working capital	2,576,630	2,635,359

During 1910 this company acquired all the patents and rights of the Westinghouse Storage Battery Co., including ownership of the rights of the General Storage Battery Co. and the storage battery interests and patents of the Westinghouse Machine Co.

Merged Companies Retain Separate Names.

Although the American Motor Truck Co., of Lockport, N. Y., has been acquired by the Findlay Motor Co., of Findlay, O., and its plant is being removed to the Ohio city, the name of the company will be con-

tinued and outwardly both companies will appear separate entities. The chief official change effected by the amalgamation is that L. E. Ewing, president of the Findlay Motor Co., has been elected president of the American Motor Truck Co., succeeding Charles R. Bishop, who resigned. The other officers of both companies remain undisturbed.

To Make Mogul Trucks in Chicago.

The Mogul Motor Truck Co. has been organized in Chicago and expects to have its samples ready within two weeks. At present it is located at 175 East Randolph street, but on May 1st will take possession of the old Randolph truck factory at the corner of Root street and Princeton avenue, in Chicago. It will produce 2½, 3½ and 5-ton vehicles. The moving spirits in the enterprise are Eugene Goldman, Herbert E. Haase and Frank Dawson, who until the 1st inst. were general manager, sales manager and manufacturing superintendent of the Randolph company.

Motor Transportation in Bankruptcy.

A petition in bankruptcy has been filed against the Motor Transportation Co., of 227 West 64th street, New York City, by H. D. Chewer, Geo. M. Brooks and John D. Ashton, creditors, alleging that the company is insolvent and has admitted in writing its inability to pay its debts. The assets are estimated at \$6,000. The company was incorporated September 25, 1908, with a capital stock of \$20,000, and George S. Hayes as president and treasurer.

Newark to Have Big Body Factory.

J. Colyer & Co., who for the better part of a century have been engaged in the carriage business in Newark, N. J., have purchased a factory site on Central avenue, between Seventh and Eighth streets, on which a five-story building, 65 x 100 feet, will be erected. It will be employed for the construction of automobile bodies as well as for the continuation of their general carriage work.

Fire Engine Makers Buy Bigger Plant.

The Robinson Fire Apparatus Mfg. Co., of St. Louis, which has been building motor propelled fire apparatus on a modest scale, has purchased an 182-foot plot of ground, and the building thereon, at the corner of 20th and Ferry streets in that city, which will permit of a greatly enlarged production.

Alabama Truck Makers Going to Georgia.

The De Loach Mfg. Co., which, although unknown to the trade, is said to have been building motor trucks in Bridgeport, Ala., is reported to be preparing to remove to Atlanta, Ga. As a step in that direction it has increased its capital from \$150,000 to \$250,000.

TO CLOSE CHICAGO'S "DUNGEON"

Plans in Hand to Avoid Use of Basement at 1912 Show—May Build Balcony in Main Hall of Coliseum.

If present plans of the management do not go awry, the "dungeon," otherwise the basement in the Coliseum, will not be used during the next national show in Chicago. Although the show is some 10 or 12 months removed, the promoters do not lack consciousness that the basement is an undesirable place; it is not only low-ceilinged and cheerless, but the two entrances to it are almost "blind" entrances and probably not one show-goer in 50 ever makes the descent into the regions below. In the face of such conditions, the wonder is that so many exhibitors for so many years have paid for the privilege of displaying their wares there.

It now is stated that the show management sought to improve matters for this year's exhibition by swinging a gallery from the girders of the Coliseum, but that the Coliseum company and its architect refused to permit it because of belief that the weight to be placed on the gallery would entail too much danger. As, however, the entire floor of the Coliseum is supported on concrete, the management now is figuring on the erection of a balcony 29 feet in depth running around the Coliseum and supported from below, which will afford about 20,000 additional feet of space. If erected it will be on a level with the bottom of the present gallery and 10 feet below the platform heretofore used for accessories. This will afford, above the main floor, two rows of spaces for accessories, each row about 11 feet deep, with a 7 foot aisle between them. In that event the upper gallery, heretofore used for accessories will be occupied by automobiles. An architect is at present at work on the plans. If he is successful in preparing a design which will not seriously affect the main floor the management is hopeful that it will be able to get along without using the Coliseum basement. It is probable, however, that the armory again will be used for both weeks of next year's show.

Sheriff Sells Lamp Factory for \$100.

To satisfy the judgments amounting to \$153,653 which had been obtained by Francis L. Leland, father of the president and treasurer of the Manhattan Screw and Stamping Works, the plant of that company at 67th street and West End avenue, New York, was sold by the sheriff last week for \$100. The property was covered by a mortgage for \$33,000 and the purchaser was supposed to be acting for the judgment creditor.



Plymouth, Mich.—Plymouth Motor Co., under Michigan laws, with \$20,000 capital; to deal in automobiles.

Grand Rapids, Mich.—Buick Motor Sales Co., under Michigan laws, with \$10,000 capital; to deal in automobiles.

Kansas City, Mo.—Bond Motor Co., under Missouri laws, with \$15,000 capital; to deal in motor cars. Corporators—George A. Bond, L. W. Lease, E. A. Bond.

Louisville, Ky.—Dunham Automobile Co., under Kentucky laws, with \$2,500 capital; to deal in motor vehicles. Corporators—George A. Dunham, W. N. Morrill, J. E. Kent.

Canton, Ohio—Auto Service Co., under Ohio laws, with \$10,000 capital; to deal in automobiles and maintain a motor livery service. Corporators—R. B. Kuhns and others.

Boston, Mass.—Percy Ford Automobile Supply Co., under Massachusetts laws, with \$50,000 capital; to deal in automobile supplies. Corporators—R. Litchfield and others.

Millville, N. J.—Auto-Machine Co., under New Jersey laws, with \$125,000 capital; to manufacture motor cars, motorcycles, etc. Corporators—T. C. Wheaton, I. Shull, H. A. Gray, all of Millville.

Clarksburg, W. Va.—Clarksburg Automobile Co., under West Virginia laws, with \$10,000 capital; to deal in automobiles. Corporators—W. A. Gaylord, E. R. Rinard, G. B. Alexander, C. F. Lucas.

Worcester, Mass.—Warren Garage Co., under Massachusetts laws, with \$5,000 capital; to deal in automobiles, accessories and parts. Corporators—John J. Barry, P. Walter Fay, Daniel E. Higgins.

Bridgeport, Conn.—Park City Motor Car Co., under Connecticut laws, with \$50,000 capital; to manufacture and deal in automobiles. Corporators—F. H. Macfarlane, Paul S. Chapman, Sara A. Foulds.

Greenwich, Conn.—Mianus Motor Works, under Connecticut laws; to manufacture gas engines. Corporators—George Gray, F. A. Hubbard, C. B. Allyn, A. P. Avery, W. N. Hubbard, all of Greenwich.

Platteville, Wis.—Acme Auto & Garage Co., under Wisconsin laws, with \$10,000 capital; to maintain a garage and deal in motor cars. Corporators—John Kettler, Warren L. Torne, Frank T. Goodell.

Chicago, Ill.—Overland Tire Co., under Illinois laws, with \$5,000 capital; to do general manufacturing, jobbing and mercantile business. Corporators—George S.

Pines, Asher J. Gelding, Edward R. Newman.

Chicago, Ill.—Punctureless Tire Co., under Illinois laws, with \$5,000 capital; to manufacture and deal in automobiles, tires, tire fillers and specialties. Corporators—Camille E. Roy, John Dahl, H. L. Roy.

Indianapolis, Ind.—Motor & Mfg. Co., under Indiana laws, with \$300,000 capital; to manufacture and deal in gasoline engines and motor cars. Corporators—W. S. McDonald, J. Olias Vanier, G. R. Brown.

Ft. Wayne, Ind.—Ft. Wayne Motor Sales Co., under Indiana laws, with \$10,000 capital; to manufacture, sell or rent automobiles or parts thereof. Corporators—C. R. Dancer, H. R. Fullenwider, H. S. Morrison.

New York City, N. Y.—Reo Export Co., under New York laws, with \$25,000 capital; to manufacture and deal in automobiles and accessories. Corporators—D. W. Bishop, R. A. Rainey, R. M. Owen, all of New York City.

Richmond, Va.—Worth Electric Vehicle Co., under Virginia laws, with capital of \$5,000 minimum, \$25,000 maximum; to do general automobile business. Corporators—Herman C. Schmidt, E. W. Cole, D. W. Richards.

New York City, N. Y.—Cody Motors Co., under New York laws, with \$100,000 capital; to manufacture automobiles and electric motors. Corporators—A. McMullen, Jr., R. L. Kelly, J. C. Mullin, all of New York.

Brooklyn, N. Y.—The Frank Dunham Co., under New York laws, with \$10,000 capital; to do general automobile business. Corporators—Frank Dunham, of Brooklyn; Gustave Rees, John R. Mulder, of New York City.

Elizabeth, N. J.—Herman L. Schick Co., under New Jersey laws, with \$25,000 capital; to manufacture carriages, wagons, automobiles, etc. Corporators—P. J. Olde, F. G. Olde, of Elizabeth; J. H. Olde, of Roselle, N. J.

Jersey City, N. J.—Abbott-Detroit Motor Co., under New Jersey laws, with \$30,000 capital; to manufacture and deal in automobiles. Corporators—L. A. Hopkins, W. M. Botto, of New York City; J. G. Hocke, Bayonne, N. J.

Cleveland, Ohio—The Right-O'Way Horn Co., under Ohio laws, with \$25,000 capital; to manufacture automobile accessories. Corporators—Ira E. Stump, Hugh Pease, William H. Enyon, F. B. Cavanagh, C. J. Benkoski.

Indianapolis, Ind.—Regal Motor Car Co., a Michigan corporation with \$1,000,000 capital; admitted to do business in Indiana; capital represented in Indiana, \$5,000. Indiana corporators—C. R. Lambert, F. W. Haines, J. E. Lambert.

New York City, N. Y.—Standard Taximeter Co., under New York laws, with \$75,000 capital; to manufacture taximeters; cyclometers and other registering devices. Corporators—G. A. Knobloch, of New York City; W. B. Vause, G. W. Vause, of Brooklyn.

Minneapolis, Minn.—Twin City Auto Exchange & Sales Co., under Minnesota laws, with \$100,000 capital; to deal in pleasure and commercial motor vehicles. Corporators—John A. Hedlund, C. A. Allen of Deadwood, S. D.; Folmer Jarner, of St. Paul.

Cohoes, N. Y.—Cohoes Automobile Co., under New York laws, with \$15,000 capital; to deal in automobiles and other motor vehicles. Corporators—James H. Mitchell, T. F. Kennedy, James H. Shine, J. S. Carter, all of Cohoes, and Matthew H. Davidson, of Northside, N. Y.

Joliet, Ill.—Acme Auto Appliance Co., under Illinois laws, with \$50,000 capital, of which \$3,200 has been paid in; to manufacture and sell automobile accessories, appliances and supplies. Corporators—Byron Gaskill, Frank Gaskill, Chester H. Johnson, Thomas J. Bracken, John H. Garnsey.

Changes Among Prominent Tradesmen.

Arthur W. Barber, assistant sales-manager of the Chalmers Motor Co., has resigned that position to become the western sales-manager for the Stevens-Duryea Co. He will make his headquarters in Chicago.

A. H. Bartsch, who for some time has been identified with the advertising department of the Bosch Magneto Co., of New York, has been promoted to the post of advertising manager. He succeeds Harlow Hyde.

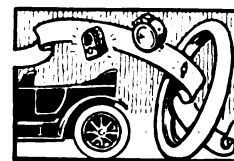
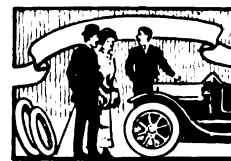
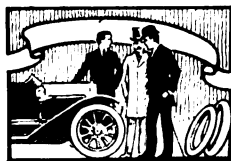
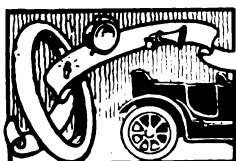
Recent Losses by Fire.

Erie, Pa.—Wolverine Garage, 16th street, destroyed. Loss heavy; no insurance.

Dorchester, Mass.—Hollis R. Crane's garage, 51 Van Winkle street, destroyed. Loss, \$3,000.

Elgin, Texas—Morrell's garage, three dwellings burned. Loss, \$10,000, on garage and contents.

Petersburg, Ind.—Catt Brothers garage and four automobiles burned. Loss, \$5,000; partly covered by insurance.



A. L. Allen has opened a garage in Brodhead, Wis.

C. E. Benson is building a garage in Deerwood, Minn.

E. J. Miles & Co., of Newton, Ia., have opened salesrooms and a garage there and will display the Rambler, Ford and Reo lines.

M. W. Frace has purchased the garage of F. W. Woodruff, on Morris street, Easton, Pa., and will conduct it under his own name.

of New York City, have formed the Lion Sales Co., with headquarters at 1849 Euclid avenue, Cleveland, Ohio. They will handle the Lion car exclusively.

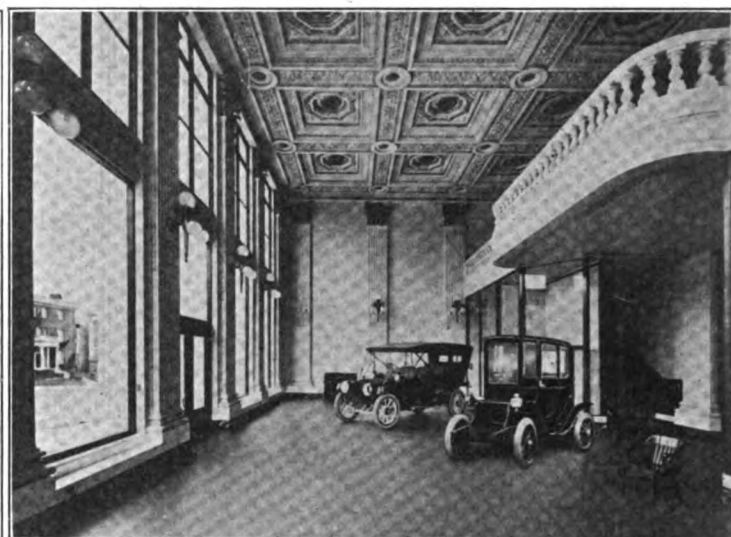
Two brothers, Charles and Lamont Rutledge, of Marquette, Mich., have purchased the garage and repair shop of John C. Johnson on Second street. They will specialize in rebuilding second-hand cars.

Johnson & Trautman is the style of a new firm which has opened a garage in Whitewater, Wis. Accessories and supplies

of Massachusetts. Their headquarters are in Boston.

The first meeting of the creditors in the bankruptcy case of the Consolidated Motor Co., of Birmingham, Ala. resulted in the declaration of a dividend of 25 per cent. on unsecured claims. Judge Edmund H. Dryer is the referee.

Charles Calvert, who formerly represented the Winton line in Indianapolis, Ind., has secured the agency for Everitt "30" cars and "opened up" in Newark, N. J.



SAN FRANCISCO SALESROOM OF CUYLER LEE, AGENT FOR PACKARD AND WAVERLEY CARS

The Brush Auto Co., of Fond du Lac, Wis., is the latest concern to open up in that city. As the name indicates, Brush cars will be handled.

The Tyler Motor Co. has been incorporated under the laws of the state of West Virginia. Its headquarters are on Rexford street, Sisterville, W. Va.

The Reo Automobile Co., of Washington, D. C., has leased salesrooms at 1045 14th street, Northwest, where the name implies that Reo cars will be displayed.

J. C. Wheeler has purchased an interest in the Frank Fox Garage, Terre Haute, Ind., and will become its manager. The company handles the Pope-Hartford line.

Work has been started on a new garage in Springfield, Mass., for the Williams Auto Co. It is located at the corner of Franklin and Maple streets and will be 60 x 100 feet.

H. J. Willard and George L. Pierce, Jr., have formed a partnership and opened salesrooms and a garage at 15 Friendship street, Boston, Mass. They will handle the Elmore line.

J. D. Costlow and R. N. Fishel, formerly

are to be dealt in, in addition to maintaining a garage and livery service.

The Atlas Auto Sales & Supply Co., of Cincinnati, Ohio, has filed a certificate of a change of name to Welland Auto Sales Co. No changes in the personnel of the company accompanied the renaming.

New salesrooms are being erected for the Vigo Auto & Electric Co., of Terre Haute, Ind., at Fourth and Cherry streets. They will house the Inter-State, Regal and Buick lines, for which the company is agent.

The Morristown Auto Co., with headquarters in the Minnesota town of that name, has opened salesrooms and a livery service. The company will also deal in accessories and agricultural implements.

The Waterville Motor Co. is the style of a new concern which has been formed in the Maine city of that name. A garage, 100 x 62 feet, two stories and basement, is being erected for its use at a cost of \$25,000.

Robert Seymour and Edgar R. Gould have organized a corporation under the style the Atterbury Motor Truck Co., and will handle Atterbury trucks in the state

where several years ago he was engaged in the automobile business.

Simultaneously with the opening of their new garage and salesrooms at 925 Market street, Youngstown, Ohio, Eddy & Henderson have added Marion cars to their lines. They now handle the Brush, Maxwell and Marion brands.

The United States Auto Station, of Buffalo, N. Y., has taken on the agency for Rauch & Lang electrics, and has remodeled and changed its big garage to be adapted to the needs of electrics. The company now has facilities to take care of 200 electrics at 1114 Main street, its headquarters. Elmer E. Horris is president of the company.

A writ of replevin has been issued against Frank E. Malone, a dealer at 48th street and Broadway, New York, for two automobiles, valued at \$2,310, in favor of the Imperial Automobile Co., of Jackson, Mich., which it is claimed were sold to him on consignment to be paid for by March 1. Another writ is in the hands of the sheriff against Malone, for \$2,911 in favor of Stephen Comstock.



Remy Announcement

THE sale by the founders and builders of the Remy Electric Company of Anderson, Indiana—the world's largest and best equipped factory devoted exclusively to the making of magnetos—means, to the trade and public, only another step toward the perfection of Remy products and Remy Service.

The Remy Electric Company will operate independently as heretofore. It is in no way affiliated with any combination. Its threefold purpose is to build the best magneto ignition and illumination systems; to use its unlimited facilities for economical production, to permit its customers to share in these economies; to increase the present transcontinental organization so that it will serve the interests of Remy patrons in a manner that will merit continuous business and appreciation.

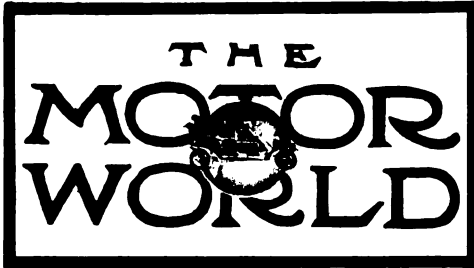
Continuous Service is the policy of the Remy Electric Company. Our interest does not end upon your receipt of Remy Magnetos. Our engineers, salesmen, expert mechanics, extend to our customers, everywhere, thoughtful and continuous consideration, gladly and courteously.

Remy Electric Company

Factories — ANDERSON, IND. — Gen. Offices

NEW YORK BOSTON DETROIT CHICAGO
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Checking the Haste and the Waste.

Of the evils of rush work, with its risks, its wear and tear on equipment and its overtime expense, perhaps no industry is more familiar than the automobile industry. The earlier chapters of its history are filled with records of hurried effort which has taken heavy toll of capital of brain and of brawn, to what lasting purpose it does not matter now. But happily the time rapidly is passing when hasty production is justifiable or even excusable; the thinking men of the trade are beginning to appreciate its needlessness and to deplore the waste which it involves.

Even overlooking the insidious effects of rush production upon manufacturing departments it is patent that in its present condition the market itself is made to suffer a penalty for undue haste in turning out cars—and the automobile market, just now in particular, is in no position to be trifled with. Under pressure from over-zealous

producers sales managers hasten to load branches and dealers with all the cars they can stand. Distributors, finding their floors stocked with cars and with more coming in at a rate far in excess of their normal out-flow may be stimulated to extra, wholesome effort to increase their selling rate, but they are quite as apt to be tempted to tactical, if not technical indiscretions in making terms of sale that will lead to difficulties later on. In many instances it is known that the the dealers themselves are reluctant to accept heavy stocks in the spring and that they do so merely in fear of later inability to secure their allotments at a time when they are needed. In so doing, needless to add, they are but shouldering an extra burden and one which, in addition to that which the manufacturer himself is assuming renders the needless tax upon the entire industry a serious one.

Manufacturers who have studied their markets closely enough to form an exact estimate of their capacity from week to week and month to month rapidly are learning that it is possible to distribute their production over a longer term and still to meet delivery obligations. Thereby they are enabled to reduce their average production rate, prolong their manufacturing period and avoid the prodigal extravagancies of double-shift production. They have brought themselves to realize that slack periods are inevitable—that it no longer is possible to go at top speed all the time. Such foresight enables them to avoid also the prolonged shut-down, while the slack time is profitably employed in "checking up", in looking themselves over, so to speak, and in inventory taking, in over-hauling equipment, in tool-making, in stocking of materials and parts and even at times, in the building of bodies and machinery or parts in conservative measure. A shrewd application of the old injunction "haste not, waste not," thus brings them nearer the goal of year 'round operation, if not of year 'round production. More important still, it enables them to keep in better touch with the market, thereby, reducing outstanding investments and so assisting credits and increasing prosperity.

Possibilities of Motor Fire Engines.

All things considered it may not be so very surprising that fire department authorities and the insurance underwriters under whose dictatorship they labor should be

none too confident of the gasoline engine when it comes to adopting new equipment. They have delayed the installation of automobile apparatus until there can be no further question of its reliability as a means of propulsion, nor of its economy as compared with horse equipment. Of the advantages accruing from its speed there never was any doubt. But, as was intimated in these columns last week, the use of a steam power plant for pumping and a gasoline plant for purposes of propulsion looks very much like begging the question.

While gasoline engines are in sufficiently general use for propulsive purposes to have their qualities amply demonstrated, the fact remains that in the specific application to the driving of high-pressure pumps they are not so well known. Hence in this application it may be considered that they are more or less unproven. The experienced gas engine man, however, finds it rather difficult to discover any reason for such an attitude. The power requirements of pumping machinery are thoroughly standardized and it is possible to design a reasonably efficient gas or gasoline engine to carry any sort of definite load, be it large or small.

So, without taking into account what already has been accomplished in the construction of gasoline fire engines, there would seem to be little doubt that the composite type of gasoline-driven steamer finally will be supplanted by the all internal-combustion apparatus. With reference to such a development, it is possible that the use of two engines will find favor, not merely as rendering the driving and pumping functions independent of one another but also as providing means for relaying, through suitable transmission mechanism, when extremely heavy pressures are required, and also of using the two engines interchangeably for both purpose, thus practically duplicating the motive power equipment. Indeed there are many reasons why such an arrangement would seem to be advantageous, though by no means necessary. Certainly it was not considered essential to duplicate the steam plants of the early self-propelled engines, which already have performed magnificent service, and it is difficult to see why duplication of the plant should be any more necessary with gasoline than with steam.

Two points are greatly in favor of the gasoline engine of the future. One is the unification of power, the elimination of

horses and consequent simplification of equipment. The other is the reduction of weight. This will result not so much in reducing the weight of apparatus, which is not necessary, but in increasing the amount of equipment that can be carried on the engine. The engine of the future thus may become a carrier of all forms of equipment, a miniature department in itself. In this way the number of separate pieces of apparatus in service may be reduced in small departments while each unit will be capable of accomplishing more in the way of swift and effective fighting than three or four may do under the present methods.

The Building of Bodies for Trucks.

In the building of custom bodies to purchasers' specifications certain commercial vehicle manufacturers claim to have reached a state of affairs where the perplexities of repeated and minute alterations are almost as disconcerting as are those encountered by the average ladies' tailor who is "anxious to please." Not that motor truck buyers have reached the climax of fastidiousness where they demand certain "effects" in the arrangement of the buttons in the upholstery of the driver's seat exactly, although some of the changes desired appear to be hardly more germane to successful trucking, but rather that buyers of the fussy type are fast developing amazing ideas as to the exactitude of their own requirements.

In some instances the demands of individual owners have become so burdensome as seriously to cut into the profits of sales besides delaying the closing of contracts, absorbing considerable salesmen's time and necessitating diplomatic precautions to prevent friction between the parties of the first and second parts. Not content with ordering a plain flare-board tray body made to particular dimensions, some customers are prone to be extremely put out if the measurements fail by an inch or two, even though the difference may make no appreciable difference in handling the load and even though the distinction may mean the difference between reproducing a body that already has been built for another customer or the drawing up of a new set of plans. Again, the set of a top, the length of the visor extension from the front, a difference of a half-inch in the width of the lettering on the name-board or even a slant in the letters may be the cause of objections leading to more or less troublesome changes. The expense of such alterations

is estimated by one sales manager at not far from \$50 to \$75 per job. The cost, of course, falls upon the seller, and frequently arises through no fault of his.

It is obvious that in many classes of service the use of stock bodies is well-nigh out of the question. Service demands vary almost as widely in the matter of the bulk and disposition of the load as they do in respect to routes and schedules, but like the latter, they are subject to more or less exact classification. Hence it is to be supposed that for given lines of trade certain body standards ultimately will be developed.

The automobile builder's inclinations naturally lie in the direction of sticking to the production of chassis, following standard designs as closely as possible and allowing no delays for satisfying the whims of the individual buyer. Hence a possibility arises of the ultimate segregation of the commercial vehicle industry into two branches; the carriage industry, indeed, is pleased to discern just here an opening for the old-line wagon builder and dealer as agents for chassis and builders of bodywork. Another possibility already discussed in the industry to some extent is that of separating chassis and body departments within the automobile builder's own organization to the extent of causing the latter to assume all burden entailed by the exigencies of custom work and the incidental alterations. This plan even contemplates the sub-letting of the body end of the business as a separate contract in order to free the manufacturer from annoyance and, to a certain degree from speculative risk.

Mr. Ernest A. Moross certainly is entitled to most distinguished consideration. Any other man who could afford to pay \$50,000 for a bunch of four second-hand cars and \$15,000 for another of the same kind would be entitled to similar consideration. In Mr. Moross's case, however, the purchases indicating such a sudden rush of wealth to the pocketbook as to be more than usually impressive. Mr. Moross for some time has been located in the South, where ever and anon a bale or two of old Confederate script is discovered, but it is wholly unlikely that the astute Mr. Oldfield, from whom he purchased the job lot of four cars, would accept such tender even in part payment. The prices paid, therefore, prove clearly that those who contend that the second-hand car constitutes a serious problem are badly mistaken.

COMING EVENTS

March 18-25, Pittsburg, Pa.—Annual show in the Exposition Building.

March 18-25, Montreal, Canada—Automobile and Aero Club of Canada's show in Drill Hall.

March 20-25, Youngstown, O.—Youngstown Automobile Club's show in Auditorium rink.

March 20-25, Wilkes-Barre, Pa.—Wilkes-Barre Automobile Club's show.

March 20-26, Quincy, Mo.—Show at Highland Park.

March 22-23, Muskogee, Okla.—Show in Convention Hall.

March 22-25, Watertown, N. Y.—Watertown Dealers and Manufacturers' Association's second annual show in armory.

March 25-April 8, Pittsburg, Pa.—Pittsburg Automobile Dealers' Association's fifth annual show in Duquesne Garden.

March 27-30, Jacksonville, Fla.—Racemeet on Atlantic-Pablo Beach.

March 31-April 8, London, England—Commercial vehicle exhibition at Olympia.

April 1-8, Montreal, Can.—Annual show in Coliseum.

April 8-9, Los Angeles, Cal.—Twenty-four hours race on Los Angeles motor-drome.

April 15, New York City—Motor Truck Club's commercial vehicle parade.

April 22, Redlands, Cal.—Annual hill climb from Redlands to Oak Glen.

April 29, Philadelphia, Pa.—Quaker City Automobile Club's roadability contest.

April 30, Omaha, Neb.—Motor Speedway Association's race meet.

May 15-18, Washington, D. C.—Washington Automobile Club's "Clover Leaf" Endurance Run.

May 30, Indianapolis, Ind.—Five hundred miles international sweepstakes race on the Speedway.

June 22, Chicago, Ill.—Chicago Motor Club's annual hill climbing contests on Algonquin Hill.

July 2, Le Mans, France—International road race for the French Grand Prix.

July 19-29, Chicago, Ill.—Chicago Motor Club's motor truck run from Chicago to New York.

August 25-26, Elgin, Ill.—Chicago Motor Club's national stock chassis road races.

September 9, Bologna, Italy—International over the Bologna circuit.

October 7, Philadelphia, Pa.—Quaker City Motor Club's 200 miles race at Fairmont Park.

October 12-22, Berlin, Germany—International automobile show in Exhibition Hall, Zoological Gardens.

OUTLAWED CARS ARE PURIFIED

A. A. A. Now Sprinkles Rosewater on Oldfield's Racers—Moross Pays \$1,000 for It and Gives a Guarantee.

The contest board of the A. A. A. this week again had recourse to its whitewash brush and rosewater bottle, and as a result the four racing cars which comprised "Outlaw" Oldfield's "stable" are once more spotless and sweet-smelling, which is to say that their disqualifications have been entirely removed—just in time for the cars to be made ready for the races on the Jacksonville (Fla.) beach next week.

To pay for the whitewash and rosewater, the A. A. A. exacted the sum of \$1,000, the exaction being termed a fine which has been paid by Ernest A. Moross, who apparently followed a rainbow and discovered and dug up a big pot of gold on the Southern beach or on the Jacksonville track where the ponies prance and the "bookies" make books. He is alleged to have paid \$50,000 for the four cars and at any rate he convinced the A. A. A. board that the "ownership and control of said cars had passed into the hands" of the said Moross, to quote the official language. In addition to paying the fine of \$1,000, Moross, again to quote official language, "guaranteed that under no circumstances shall the cars revert to their former owner during the period of his disqualification," which is language that conveys a whole train of suggestion.

It transpires that the conditions governing the reinstatement of the cars were adopted by the A. A. A. contest board at a meeting held on March 8th. Meanwhile Moross evidently has been engaged in getting to the bottom of his purse for the small change represented by the fine. The cars reinstated are Oldfield's Blitzen Benz, his Prince Henry Benz and the Vanderbilt Darracq and the six cylinder Knox, which usually were driven by Ben Kerscher, whom Oldfield said he paid \$75 per week for making good races. Moross has Bob Burman and one or two other drivers under his wing and has designs on the easy money which Oldfield and his barnstormers used to garner on the b'gosh circuit.

Preparing for West's Speed Carnival.

Although preceded by reports of serious disagreement between the Elgin Road Race Association and the Chicago Motor Club, who jointly promote the Elgin road races, which again will include the national stock chassis championships, when the alleged warring factions came together at the annual meeting last week they cooed almost as doves are wont to coo.

There was no contest for the presidency of the association, Harry D. Hemmens, the postmaster of Elgin, being unanimously

elected. The other officers chosen are as follows: T. Schmitz, vice-president; W. C. Willson, secretary; P. Freiler, treasurer. Directors, G. W. Glos, S. W. Jencks, M. M. Cloudman, M. S. Aldridge, C. J. Heywood and the four officers named above. The board of directors was increased from seven to nine members. The treasurer's report showed a balance on hand of \$3,497, after a 50% dividend had been returned to the stockholders on their original investment. Plans for a general improvement of the course were outlined and talk of securing Federal troops to police the course was indulged in.

The races will occupy two days, as usual, August 25 and 26. The big 300 miles event, for the Elgin national trophy, will be run on the second day.

Tetzlaff Trounces DePalma in Record Time.

Although Ralph DePalma is at his best on a circular track, he was given a trouncing at the Playa del Rey Motordrome, Los Angeles—a mile board track—on Sunday last, 19th inst., that he is likely to remember for a while. The race in which DePalma suffered defeat was a several times postponed 100 miles match with Teddy Tetzlaff, and so fast was the pace that four world's records were established. Tetzlaff, who drove a Lozier equipped with Michelin tires and Bosch high-tension magneto finished the distance in 1 hour 14 minutes 29½ seconds, which is just 1 minute 52½ seconds faster than the old record, made by Ray Harroun, and an average of 81 miles per hour. The other records to fall were the 25, 50 and 75 miles, the times for these distances being 18:22½, 36:35½ and 54:50½, respectively. When the race finished DePalma, who drove a Fiat, was six and one-half miles to the bad. He got the worst of the tire trouble, being forced to make two stops while Tetzlaff, who leaped into fame in the Los Angeles road races last fall, made but one.

Three-Wheeled Tourists Stopped by Mud.

At last accounts, Ward Sherwood and his companion, who left New York on February 24 intent on a cross-continent journey in a Kelsey three-wheeled motor-ette, were mud bound in Roanoke, Va. After leaving Wilmington, Del., they encountered mud which after they had passed through Washington was so bad that they were compelled to turn back and alter their route to Roanoke, where they since have remained.

Two More Globe Girdlers Set Out.

Christy Brooks and Ed. Norris have left Toronto, Can., in a Herreshoff car in which they are going around the world. Signs painted on the car say so, at any rate. The globe girdlers, who are said to be paying their own expenses on the long trip, intend to visit many countries never touched by the average touring motorist.

LAW DOESN'T MEAN WHAT IT SAYS

New Yorkers Therefore Must Pay for Delivery of Their Registration Tags—Result of Test Case.

As a result of a decision handed down by Supreme Court Justice Allen Chester of Albany, N. Y., on Monday, 20th inst., Secretary of State Lazansky will not have to worry about the delivery charges on automobile registration tags. The decision came as the result of the test case, instituted by Royal R. Scott, who is the president of the Canandaigua Automobile Club, with the intention of compelling the Secretary of State to furnish him his registration tags free of delivery charges at his place of domicile in Canandaigua. Strength was given to Mr. Scott's attitude by reason of the fact that he himself only recently was a judge.

Last year, when official tags first were issued, the office of the Secretary of State delivered all plates to automobile owners charges prepaid. The expense connected with the delivery reaching nearly \$25,000 last year, the incoming new Secretary of State sought legal advice from the Attorney General's office and decided to make the automobile owners themselves pay for delivery charges of tags to their places of business or domicile, or to compel them to fetch the plates from one of the offices or branch offices of the Secretary of State. A large number of motorists, said to reach 20,000, refused to do this, and a number of applications were made for writs of mandamus to compel the Secretary to deliver the plates without expense to the applicants. Meanwhile the police officials of several cities refused to make arrests until the question was decided in court.

The first of these writs of mandamus to be argued was that of Mr. Scott, who based his application upon the words of the Callan bill: ". . . the Secretary of State shall assign to such motor vehicle a distinctive number, and without expense to the applicant issue and deliver to the owner a certificate of registration . . . and two number plates." Furthermore he called attention to the use of the word "furnish" in the case of applications for chauffeurs' badges, in contradistinction to the words "issue and deliver" when applied to owner's license plates. He claimed that if it had been the intention that owners should call at the office of the secretary, the word "furnish" should have been used instead of "issue and deliver without expense." Mr. Scott also stated in his application that he lives 30 miles from Rochester, the nearest branch office, and that the trip would cost him at least 80 cents, and three hours' time. Despite this plea, Justice Chester denied the application, declaring the words

KIMONO AS MOTORING COSTUME

The "Gentlemen of Japan" Prove that It is Useful for the Purpose—Its Picturesqueness Undoubted.

While "the clothes oft' proclaim the man", they may also often be said to disguise the man to a certain extent at least to the eyes of the majority of automobile owners who are not familiar with customs in the Far East. Whereas in the wardrobe of the conventional motorist of Anglicized nations there may be many garments which are "fearfully and wonderfully built", the

in which four kimono-clad native sons are shown, two of them being in a Hupmobile which is being used to tow home a disabled foreign touring car, its companion on a 5,000 miles jaunt through the hills of Japan.

To "Unionize" the Racing Driver.

M. Worth Colwell, a New York poetizer and playwright who is attached to Starter Fred Wagner's automobile publication, has undertaken the uplift of the automobile racing driver, and with that end in view is endeavoring to organize a racing men's union or association. He has gone so far as to become temporary secretary, walking delegate or something like that. Colwell

"issue and deliver without expense" to mean "to deliver at the place of issuance" or in this case at one of the offices of the Secretary of State.

An amusing incident happened in court while the case was being argued. Just as Mr. Scott arose to make his argument, Henry S. Bacon, of the Secretary of State's office, handed him a package and after Mr. Scott had taken it in his hand said: "There are your number plates." Mr. Scott immediately dropped them on the table to the amusement of everybody in the courtroom. Mr. Bacon then addressed the court claiming that there was no real question to be decided at all, because Mr. Scott had received his plates "without expense" right here in the courtroom. Mr. Scott vehemently denied this, claiming he did not know what the package contained, and Judge Chester, looking down at the table on which the object of dissension was resting, ruled that as the package lay a little nearer the Attorney General's end of the table there had been no delivery.

Can't Curb Boy Drivers in Texas.

That the withholding of licenses to operate motor cars, on account of excessive youth, is "contrary to any authority vested by the State law, and also in violation of the constitution," is the decision of the Texas Court of Appeals. The particular case in question was that of Earl Epperson, 15 years old, who was arrested in Clarksville, on the charge of violating the city ordinance which forbids a person under fifteen years of age to run a motor car. Epperson was fined, and took an appeal, his case being made a test case by persons interested in automobile legislation. The decision of the lower court was reversed and the fine remitted.

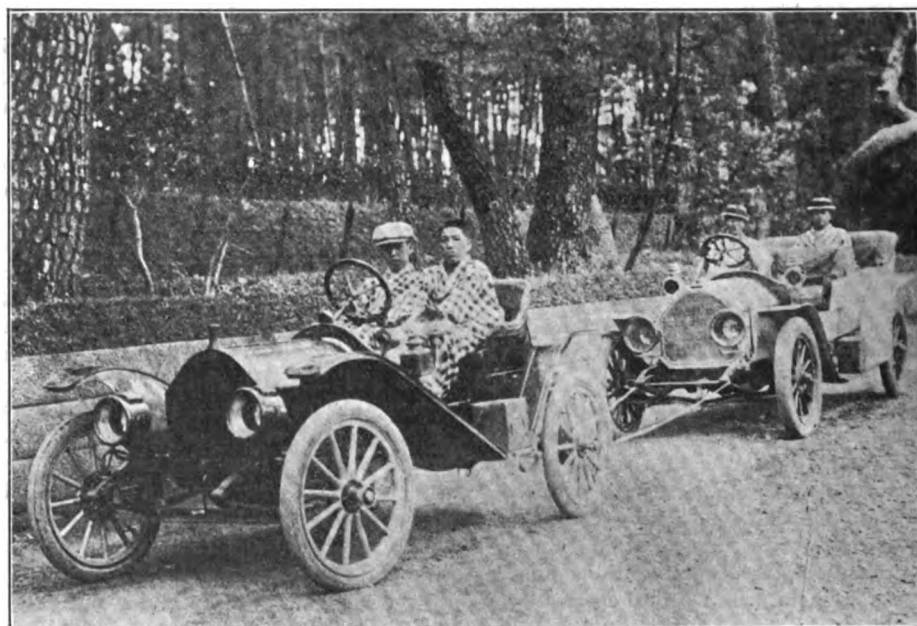
Drink that Cost a Chauffeur \$50.

Fifty dollars in good United States money was the fine assessed upon Charles Jones, of 4645 Evans Avenue, Chicago, Ill., by Judge Newcomer, in the Municipal Court, for taking a drink while on duty driving an automobile. "I consider it one of the worst offenses that can be committed to drink when you know you have to drive an automobile," said the judge, in sentencing the offender. "We have got to do something to put a stop to the killing of people and this is one place to begin.

"I promise to construe it misconduct for a man to drink when he drives a car. The fine is \$50 and costs."

Savannah Again Asks for Grand Prize.

The Savannah Automobile Club, through its president, Harvey Granger, has made application for the Grand Prize Race of 1912. As apparently no one else wants it, and as the Georgia organization conducted both of the two races that have been run, its application will almost undoubtedly be granted.



"GENTLEMEN OF JAPAN" ATTIRED IN THEIR KIMONO MOTORING COSTUMES

kimono as the principal part of an automobile costume is practically unknown, this particular piece of wearing apparel usually being reserved for other purposes more or less intimately connected with milady's boudoir. But customs regarding the use of kimonos differ in the "Flowery Kingdom" and these garments are worn alike by the "little brown men" and their sisters and wives and sweethearts. Of course there is a slight difference in the styles worn by each sex but in the end both are kimonos, and, except for their varied colors which usually are as many as the hues in the rainbow, they are not unlike some of the regulation styles of American or English "dusters".

While for centuries past kimonos thus have been worn by Japanese in all walks of life and are far from new, automobiles are new, comparatively speaking, and it is natural that Japanese should take to them—and in their picturesque native costumes in spite of the apparent incongruity of the proceeding. That the custom is general is evidenced in the accompanying illustration

himself recently acquired a snorting 10½ horsepower Red Devil and therefore knows most of the wrongs and rights of the racing man; what he does not know, he can learn from Starter Wagner, who is the president, secretary, treasurer and entire membership of the Starters' Union and who knows enough about racing drivers to fill a book.

More "Forbidden" Days in Nova Scotia.

According to the report of Consul Alfred J. Fleming, stationed at Yarmouth, Nova Scotia, the inhabitants of that Canadian province seem to take a delight in passing freak automobile laws. The latest county to write its name in letters of red upon the memory of the touring automobilist is Lanneburg County, which recently passed an ordinance forbidding the use of automobiles on the roads of the county on Sundays, Wednesdays and Saturdays. Other counties in the province have made similar restrictions, usually naming Sundays and Saturdays as the days when the use of automobiles constitutes a crime.

NEW YORK'S NEW FIRE APPARATUS

First Pumping Engine and Water Tower
are Tried Out—Successive Steps To-
ward Elimination of Horses.

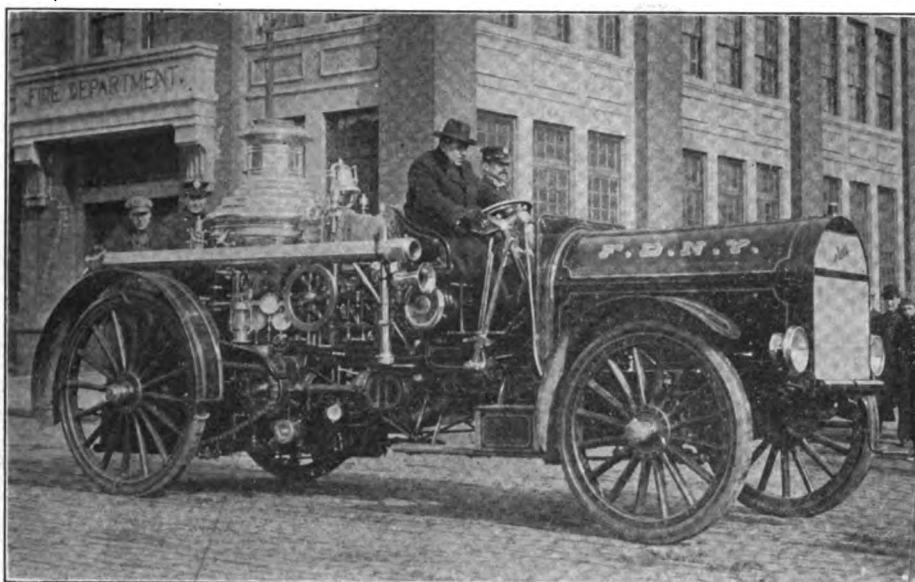
New York City has taken the fourth step in the direction of motorizing its fire-fighting equipment. The first step was the adoption of passenger cars for the use of the commissioner and the various chiefs, the

cylinder, vertical construction with the cylinders cast in pairs. Transmission is accomplished through a three-speed selective gearset with differential mechanism enclosed in the gear case, and double chain drive to the rear wheels. The transmission is controlled by a massive cone clutch, faced with Raybestos fabric, which has a 6-inch face. The guaranteed maximum speed of the machine is 35 miles an hour. The pumping outfit consists of an 83 horsepower steam plant with a rated capacity of

fighting machine, the Nott engine attained a speed of 40 miles an hour when driven over city pavements by Fire Commissioner Waldo himself, and in a pumping test delivered 750 gallons of water a minute at a pressure of 125 pounds per square inch.

Having had some experience with automobile apparatus in the past, a Knox high-pressure hose wagon having been put into service little over two years ago, the department now is preparing to increase its self-propelled equipment as rapidly as circumstances will permit. No less than 38 machines of various types, but mainly high-pressure hose wagons have been ordered recently, while six new vehicles already are in use. Besides the new steamer these consist of four Webb hose wagons and two aerial ladder trucks.

The water tower, which is in experimental use, consists of a standard water tower of a type in regular use by the city and having a La France control system with a total elevation of 65 feet. The vehicle has been "made over" by the adoption of a four-wheel drive, Couple-Gear gasoline-electric tractor of 50 horsepower, which has a maximum speed rating of 15 miles an hour. The tractor is attached to the tower truck by means of the regular "fifth wheel" arrangement. The total weight of this piece of apparatus is 20,000 pounds. The water tower, which was equipped by the New York agency for the Couple-Gear Freight Wheel Co., of Grand Rapids, Mich., now is in regular use by No. 1 Company, which is



NEW GASOLENE-PROPELLED STEAMER THAT MAKES 40 MILES AN HOUR

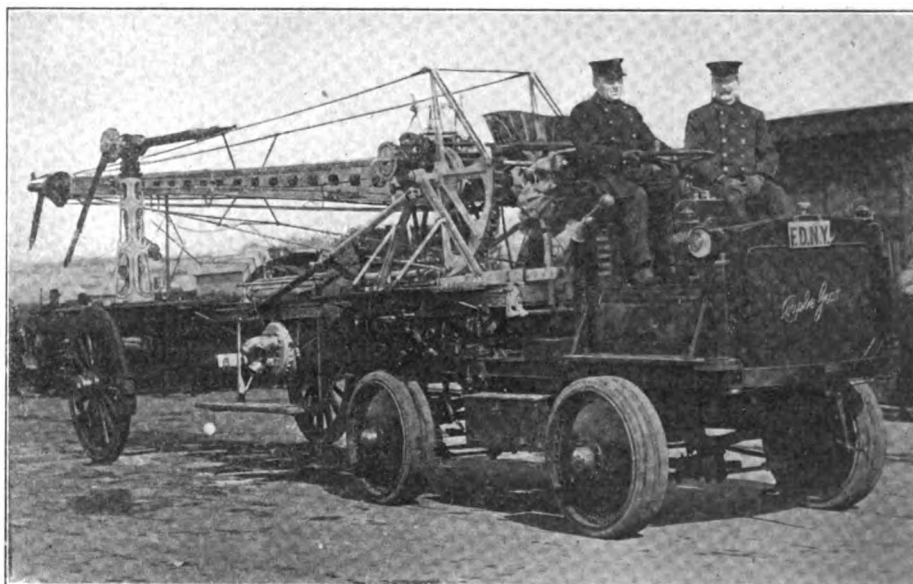
second was the adoption of gasolene-propelled hose-wagons, the third was the introduction of the motor-driven water tower and the fourth is the adoption of the gasolene-propelled pumping engine, the first of which went into routine service this week at the "busiest station" in the city, that of Engine 58, at 115th street and Madison avenue, which averages 1,000 calls a year.

The new equipment, strange as it may appear at first blush, is of composite type. That is to say it has a standard form of automobile power plant and drive, with a steam pumping plant of the most approved type at present in use. If it were desired to predict a fifth step in the evolutionary process, it might be given as that marked by the inauguration of a system in which the functions of propulsion and pumping were centered in a single engine of the gasolene type. Certainly the sixth step would be the entire elimination of horses from the department. And it seems only a question of time before both of these changes will have been accomplished.

The new engine, which was given its official tryout last Thursday, 16th inst., was built by the Nott Fire Engine Co., of Minneapolis, Minn., and is said to represent an initial expenditure of \$20,000, although the city bought it at a contract price of \$9,772. The propelling plant consists of a 100-horsepower, long-stroke motor of four-

700 gallons of water a minute. The weight of the machine is 16,000 pounds as against 7,000 pounds, the weight of a standard horse-drawn engine.

During the official trials, which were attended by numerous department officials as well as representatives of various out-of-town communities which are interested in the development of the automobile fire-



NEW YORK'S 65-FOOT WATER TOWER WITH COUPLE-GEAR TRACTOR

stationed at Lafayette and White streets, in the downtown wholesale district.

The possibility of converting existing equipment, which is illustrated in the construction of this machine is particularly attractive to the department officials, because of the immense amount of capital at present tied up in horse equipment and also because of the difficulty of financing heavy

investments in brand new machinery. Thus in the case of the water tower, the essential apparatus itself stands on the department's books at an initial cost of \$7,000. The additional cost of the tractor truck represents an outlay of \$5,500 more. But whereas the total cost of a motor-driven water tower constructed and purchased in its entirety might not be as great as \$12,500, it is a prime consideration under existing conditions that the practical equivalent of a new motor-driven water tower can be obtained at an outlay less than that necessary for a new truck of the old standard horse-drawn variety.

Similarly in the case of the gasoline-propelled steamer, \$5,272 represents the

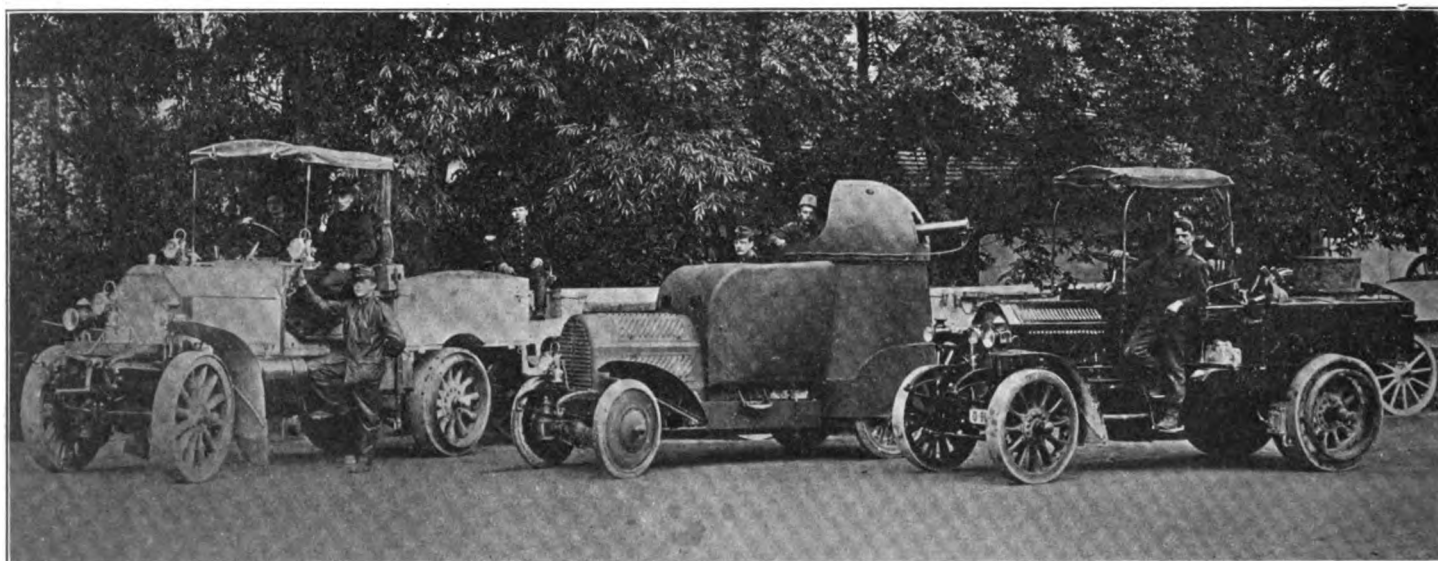
against such a program, however, is the attitude of the National Board of Fire Underwriters, which, after the investigation of the subject by a special committee last year, reported that where high pressures were to be dealt with better results were obtainable where the steam pumping equipment was retained.

As an offset to this, it is noteworthy that at a demonstration test held only last week in Springfield, Mass., the new Knox gasoline pumping engine, of the type which was exhibited at the recent automobile shows, produced results which were entirely comparable with those obtained in New York with the new steamer. Although the Knox pump is rated at 600 gallons per

high-pressure wagons are regularly equipped with forty 50-foot lengths of hose, a swivelled nozzle and other equipment. They have a rated speed of 30 miles an hour and represent an outlay of \$5,350 each. A smaller and somewhat similar type of hose wagon, which makes the same speed but carries only 1,200 feet of hose, in addition to other equipment and crew, costs the city \$4,350.

In the case of the hose wagons service conditions have been established long enough for the actual maintenance and operating costs to be clearly understood. The high-pressure truck that is now in service at engine house No. 72, in East Twelfth street, has cost only \$85 a year for

AUTOMOBILES DESIGNED TO ASSIST THE CAUSE OF WAR



THREE TYPES OF "WAR CARS" IN USE IN THE AUSTRIAN ARMY

cost of the engine and the remaining \$4,500 the cost of the propelling plant and equipment. The Nott company makes a speciality of converting standard steamers to motor propulsion and is said to be willing to undertake the motorizing of the 200 steamers which the city now owns at the rate of \$6,000 per steamer. Should the engine which now is in service prove to be all that is expected, Commissioner Waldo has let it be known that he has hopes of pursuing this plan of conversion, even going so far as to estimate that a four to six year period will be required for the elimination of horses in this manner.

While this plan has much to recommend it there are those who are of the opinion that the additional economies gained by an absolute turnover from horse and steam power to gasoline would prove more desirable in the end, despite the additional first cost of the latter alternative, which, neglecting returns from the sale of old equipment, might amount to \$2,000 and over per machine. One thing that militates

minute at a pressure of 120 pounds, it has been known to deliver 742 gallons when aided by a slight gravity flow at the suction hose. In the Springfield test of last week, it delivered full capacity when drawing from a nine-foot lift through two 300-foot lengths of suction hose. This test also was notable in its way, being attended by a large body of fire chiefs and department heads from different localities.

But whatever the solution adopted in the case of New York City's pumping engines, it seems clear that the future use of automobile hose wagons now is practically assured. This is an important point because of the present great dependence of the department on the high-pressure hydrant system and the likelihood that the high-pressure service zone will be extended within a short time.

The new hose wagons, four of which participated in last Thursday's tests, are built by the Webb Motor Fire Apparatus Co., of St. Louis, and are similar in general construction to those already in use. The

fuel, maintenance and repair. The average total cost per year for horse maintenance amounts to between \$700 and \$800, a large proportion of the amount going out for feed and shoeing. That explains one reason for the growing interest of fire chieftains in the automobile. Their most important reason though, is that the automobile will respond to an alarm in less than one-third the time required for the older forms of equipment. And minutes saved at a fire frequently mean the swinging of a balance of thousands of dollars of loss.

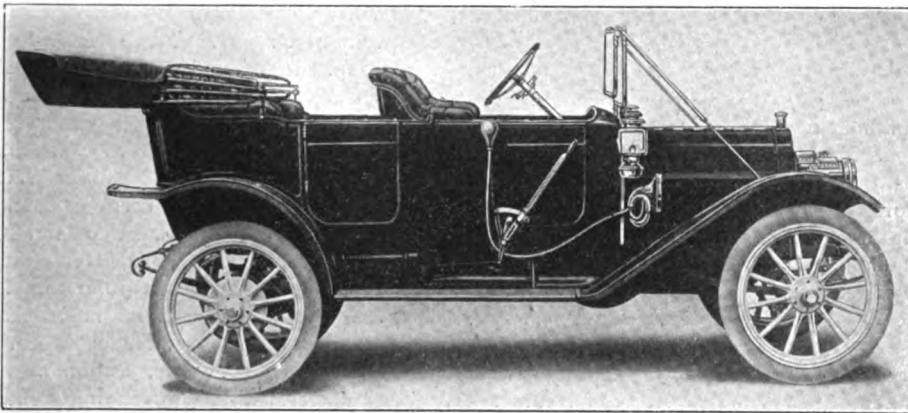
Dry Cells Affected by Temperature.

Dry cells should not be tested for amperage while cold. Low temperature reduces the efficiency of all dry cells temporarily and a cell that when cold may appear nearly exhausted will often develop surprising strength when warmed to normal temperature. If the ignition current fails on the road, it sometimes is possible to rejuvenate the batteries by warming them on the exhaust manifold.

E-M-F CAR WITH CLOSED FRONT

Its Makers Finally Produce Model with Now Popular Type of Body—Mechanical Characteristics Unchanged.

In connection with the new closed-front Flanders touring car, the details of which were described last week, the E-M-F Co., of Detroit, also is producing a new model of the larger car which bears its name, the coming of which was foretold in the same announcement. Like the "three-speed" Flanders, the new E-M-F 30 is of the closed-front variety and is built in up-to-the-minute style. It is installed on the standard chassis, which has made the E-M-



THE E-M-F CLOSED-FRONT TOURING CAR THAT SELLS FOR \$1,100

F reputation, and sells for \$1,100, or \$100 more than the regular open body model.

The general design, as shown by the accompanying picture, may be characterized as a compromise between that of the torpedo and touring car. The seat backs and doors are higher than the hood, affording a greater amount of comfort than would be possible with the straight-line arrangement in a car of the same size, while the dash is of the convex, skuttle type, affording ample protection during cold or windy weather, but equipped with ventilators for the summer. The front mud guards are long and sweeping, but the rear members are shaped over the wheels as a protection for the rear of the body. The space between the running board and lower frame line is protected by a continuous metal filler strip.

The doors are fitted with concealed latches and are built flush with the sides. The emergency brake lever is carried outside the body but the gear shifting lever is brought inside. The chassis is carried on full-elliptical rear springs and semi-elliptical front. Magneto ignition is a standard item of the equipment.

Franklin Adopts Rear Windshields.

Whatever may be said of the advantages of the torpedo type of body in other re-

spects one of its strongest recommendations is that it affords a better degree of protection to the passengers than does the standard type of touring car. It is therefore noteworthy that at least one manufacturer at last has adopted the practice of installing a double windshield outfit, one shield being mounted on the dash and the other on the back of the front seat. By this means the passengers in the rear of the car are given the same protection as those in front and the interior of the entire vehicle is entirely and amply protected from draughts.

In producing what is termed a "full" torpedo model the H. H. Franklin Manufacturing Co., Syracuse, N. Y., has had the initiative to introduce the double windshield equipment. The full torpedo, it may

be explained, differs from the ordinary torpedo to the extent that the rear of the frame is brought around in the form of a semi-ellipse, instead of being cut off square, while the back of the body slopes forward after somewhat the same manner as a turtle deck, thus leaving a sizeable storage compartment under the rear seat. The full torpedo style is not new in this country, although the Franklin version of the type is entirely original.

The new Franklin cars were shown for the first time at the Syracuse show of last week, where two examples of the type were staged. One of them was built with the standard model D, 38 horsepower chassis equipment, which has a six-cylinder engine, while the other was a variation of the four-cylinder model M chassis, which has a 25 horsepower engine.

Why Clean Water for Radiators.

Never use anything but perfectly clean water in the radiator whether or not an anti-freezing mixture is used. A certain amount of scale is bound to form in any case and the presence of impurities in the water will hasten this action. The amount of scale formed when pure water is used, however, is negligible and practically harmless, and the precaution, therefore, being well worth taking.

SHOW THAT PLEASED EYE AND NOSE

Flowers Used at Louisville Caused Agreeable Sniffing—Big Display Inaugurated by the City's Mayor.

While other shows have been pleasing to the eye, the fourth annual show of the Louisville (Ky.) Automobile Dealers' Association, which was opened by Mayor Head on March 15th in the First Regiment armory for a four days' run, was pleasing to the nose as well. Its nose-tickling properties were due to the decorative scheme employed and which was designed to contribute an outdoor "atmosphere." To obtain it trees and shrubbery in abundance were used, also an imitation red brick wall, and it was the real blossoms attached to the trees and shrubs that gave off the aroma that caused noses to tilt and sniff agreeably. The make-believe brick wall was used to separate the spaces of the automobile exhibits.

Of the 53 dealers who took space, 26 exhibited pleasure cars, 8 showed commercial vehicles and 8 staged electrics, as follows:

Pleasure cars: Rommel Motor Car Co., Brush, Sampson; Kentucky Auto Co., Cadillac; J. I. Case Threshing Machine Co., Case; Hite D. Bowman, Chalmers, Stearns; Southern Motor Sales Co., Cole; Marshall-Clark Motor Car Co., Columbia, Maxwell; Studebaker Automobile Co., Studebaker, Flanders, E-M-F; Radcliff Motor Car Co., Franklin, Stevens-Duryea; Reimers Motor Car Co., Haynes, Locomobile, Reo; McCormick-Montenegro Co., Hudson; Louisville Automobile Co., Hupmobile, Marion; Glossbrenner Commercial Car Co., Interstate; United Auto Co., Kissel, Overland, Premier; Ruby Carriage Co., Mitchell, Firestone-Columbus; Straffer-Arterburn Motor Car Co., Krit; Urwick Motor Car Co., Marmion; B. F. Fitch, Motorelle; Olds Motor Works, Oldsmobile; Miles Auto Co., Packard; Yager Motor Car Co., Peerless; Broadway Auto Co., Pierce-Arrow; Prince Wells Co., Rambler; Dr. W. O. Bailey, Speedwell; Longest Bros., Stoddard-Dayton; Dunham Auto Co., Velie; Thomas Garage, Winton.

Electric vehicles: Reimers Motor Car Co., Babcock, Fritchie; Urwick Motor Car Co., Baker; Yager Motor Car Co., Columbus; Miles Auto Co., Detroit; Louisville Automobile Co., Hupp-Yeats; Hite D. Bowman, Rauch & Lang; Studebaker Automobile Co., Studebaker; Longests Bros., Waverley.

Commercial vehicles: B. F. Fitch, Autocar, Morgan; Marshall-Clark Motor Car Co., Alden-Sampson; Killgore-Stiltz, Frayer-Miller; Broadway Auto Co., Gramm; Reimers Motor Car Co., Hart-

Kraft; Miles Auto Co., Packard; Glossbrenner Commercial Car Co., Rapid; Dunham Auto Co., Victor.

Accessories: Racine Auto Tire Co., tires; Falls City Buggy Top Co., tops and accessories; Standard Oil Co., lubricants; Wayne Oil Tank & Pump Co., storage tanks; Charles H. Moore Oil Co., lubricants, polishes, soaps; Andrew Cowan & Co., tires and sundries; Stoll Oil Co., lubricants; Niman Bros., gasoline engines; Louisville Taxicab Co., taxicab service; Roy E. Warner Co., tires and sundries; Moran Flexible Steam Joint Co., brass and other metal fixtures.

First of Pittsburg's Shows is Opened.

Pittsburg, which is one of the cities suffering rival shows, received its first instalment when the event promoted by the Pittsburg Auto Show Association, which is counter to the forthcoming show of the Automobile Dealers' Association, was opened on March 18th for one week's run. A few aeroplanes are mixed with the automobiles, which are displayed in Exposition Hall, which for the occasion is draped in red, white and gold. The chief feature of the decorations is a large wheel suspended from the center of the roof, on either side of which is a painted reproduction of the poster girl. Other paintings are used in large numbers, being hung on the walls around the gallery, while palm rooms and other cozy nooks were provided where visitors may rest and listen to the music after inspection of the cars has been finished.

The exhibitors are as follows:

Pleasure cars: East Liberty Auto Co., Abbott, Hupmobile; Alco-Pittsburg Co., Alco; Auburn Auto Co., Auburn; West Penn Auto Co., Bergdoll, Detroit electric; B. F. Benson, Moon, Brush; Donahue Motor Agency, Clark; Correja Agency, Correja; Miller Auto Co., Crawford; Cutting Sales Co., Cutting; Studebaker Co., Studebaker gasoline and electric, E-M-F, Flanders; Eddie Bald Motor Co., Everitt; Great Western Auto Co., Great Western; Paige-Detroit Agency, Halladay, Paige-Detroit; Haynes Co. of Pittsburg, Haynes; Kline Kar Motor Co., Kline; General Auto Co., Knox; Lexington Agency, Lexington; Lion Car Co., Lion; Pittsburg Auto Co., Oakland; Ohio Motor Car Co., Oldsmobile; Otto Sales Co., Otto; Overland-Pittsburg Co., Overland; Pitt Motor Sales Co., Penn; L. G. Martin, Rambler; Buhl Motor Car Co., Regal; Selden Auto Co., Selden; Speedwell Agency, Speedwell; Jason C. Stamp, Thomas; Velie Motor Co., Velie; Westcott Sales Co., Westcott.

Commercial vehicles: Alco-Pittsburg Co., Alco; Lexington Agency, Atterbury; H. Lange Wagon Co., Gramm, Chase; Crown Sales Co., Crown; West Penn Auto Co., Kelly; General Auto Co., Knox; Pitt Motor Car Co., Penn; Penn Motor Car Co., Wilcox; Speedwell Agency, Speedwell.

MONTREAL'S AMERICANIZED SHOW

Practically All of the Cars Exhibited Are Made This Side of Border—Aeroplanes Also in Evidence.

Saturday night, March 18th, proved to be a big night in Montreal, for it was on this occasion that the fifth annual show of the Automobile and Aero Club of Canada was officially opened by Mayor Guerin. The show, which will hold the boards until the 25th inst., is staged in Drill Hall, and so well has the interior been draped that the great hall is almost unrecognizable. Special stage scenery has been painted for the occasion, and this, with a tri-color scheme in decorations, flags of Canada, Union Jacks and large electroliers makes the scene pleasing to look upon. While the motor car is the center of attraction, the motor boat and aeroplane have their places and, it is needless to say, the latter absorbs the attention of a large number of visitors.

Although most of the exhibitors are Canadians, most of the cars they exhibit are, of course, of American manufacture, there being but one purely Canadian car, the Russell, with its sliding valve engine. Four others that nominally are of Canadian manufacture are merely American cars assembled on Canadian soil.

Following is the list of exhibitors of automobiles or automobile supplies:

Automobiles: P. Gadbois Co., Montreal—Speedwell, Marion, Hupmobile, Regal, Dominion, Glide, Westcott and Cole; Stockwell Motor Co., Montreal—Oldsmobile, Peerless, Maxwell, Reo, Velie and Lozier; Ford Motor Car Co., Montreal—Ford; Canada Cycle & Motor Co., Montreal and Canada—Russell; McLaughlin Motor Car Co., Oshawa—McLaughlin-Buick; Comet Motor Co., Montreal—Chalmers, McLaughlin-Buick and Packard pleasure and commercial cars; E-M-F Co., Walkerville, Ont.—E-M-F; National Motor Car Co., Montreal—Pierce-Arrow and Stearns; Motor Import Co. of Canada, Montreal—Brush, Franklin, Thomas, Hudson and Knox pleasure and commercial cars; Wilson Auto Co., Ltd., Montreal—Locomobile, Mitchell and Overland; Tudhope Motor Car Co., Orillia, Ont.—Everitt; Montreal Locomotive Works, Montreal—Alco pleasure and commercial cars; Hill Motor Car Co., Montreal—Moon; French Auto & Import Co.—Gregoire and Berliet.

Accessories: National Carbon Co., dry cells; Canada Cycle & Motor Co., supplies; Fairbanks Co., supplies; Rubber Tire Wheel Co., Fisk tires and Weed chains; Tate Accumulator Co., storage batteries; Consolidated Rubber Co., tires; Dunlop Tire Co., tires; Goodyear Tire & Rubber Co., tires;

John Millen & Co., supplies; S. F. Bowser & Co., storage tanks; Bosch Magneto Co., magnetos; Atlas Chain Co., tire chains; J. Grenier, Galois tires.

Twenty-One Exhibitors at Wilkes-Barre.

Wilkes-Barre, which is in the coal region of the Keystone State, opened its automobile show Monday last, 20th inst. It occupies the Ninth Regiment armory, where it will remain until the end of the week. The show, held under the auspices of the Wilkes-Barre Automobile Club, has appealed to the dealers of the town to such an extent that 21 of them have taken space, 14 exhibiting cars, six showing accessories and one staging motorcycles. Symmetrical designs of colored and frosted and incandescent bulbs and great streams of bunting constitute the decorative scheme.

The list of exhibitors is as follows:

Automobiles: W. C. Moore Auto Co., Matheson, Lion and Hupmobile; Pugh Motor Car Co., Kissel; S. Ruse, Chase commercial and Schacht; Susquehanna Motor Car Co., Cadillac; Stroh Auto Co., Abbott-Detroit, DeTamble and Maytag; Wilkes-Barre Automobile Co., Peerless, Buick and Velie; Challenger Bros., Alco and Oakland; City Auto Co., Ford; Herschberger & Casper, Everitt; Robert Johnston, Maxwell and Overland; B. E. Loomis, Schacht; Edmund Lutes, Elmore; Nance Motor Car Co., Nance; H. S. Nagle, Pullman.

Accessories: Atlantic Refining Co., Lubricants; Kitsee Battery Co., dry cells; Keystone Lubricating Co., lubricants; Simon Long's Sons; Standard Top Co., automobile tops; Wilkes-Barre Automobile Co., supplies; Benjamin F. Connor, motorcycles, and supplies.

Watertown's Little Show in State Armory.

Watertown is not a very big dot on the map of New York, but it has a state armory and enough dealers and enthusiasts to justify a show. The Watertown Automobile Association tried one last year, and it proved so successful that the association, which is composed of the local dealers, opened another one on March 22d, which will continue for the rest of the week. There are 17 exhibitors, as follows:

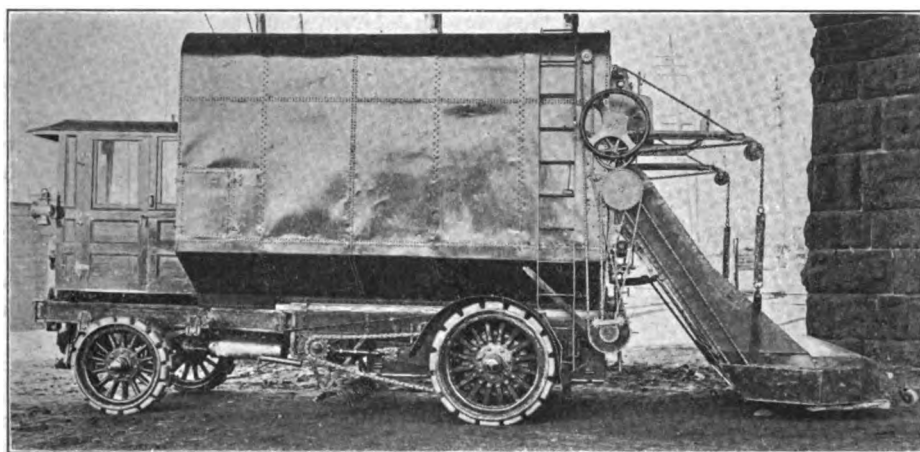
Watertown Automobile & Supply Co., Mitchell, Overland, Oakland, Oldsmobile; H. H. Babcock Mfg. Co., Babcock pleasure, commercial and electric; W. D. Nellis, Reo; G. A. Grapotte, Selden; A. E. Christopher and F. H. Edwards, Maxwell, Hudson; Sprague & Haynes, Cadillac; Gould Bros. Auto Co., Buick; George H. Blatz, International, Jackson; W. P. Smith, Flanders, E-M-F; Warner Automobile Co., Ford.

Accessories: Warren J. Green, electrical supplies; E. Q. Williams, spark plugs; Standard Oil Co., lubricants; People's Oil & Fuel Co., lubricants; C. R. Eggleston, gasoline tanks, pumps, etc.; J. C. Perrault, tops; F. H. Merritt, motorcycles.

MOTORS FOR STREET CLEANING

Two New Vehicles Designed for the Purpose—Incorporate the Principles of the Endless Conveyor.

The problem of cleaning the streets without raising the dust or in such a way that the resulting sweepings will be neither carried by the wind into the windows of adjoining houses, nor annoy the pedestrians



NINE-FOOT EMERSON MOTOR STREET SWEEPER; CAPACITY, 10 CUBIC YARDS

using such streets, has been one of the most difficult confronting the administration of New York and, in fact, of all other cities. The need of specially constructed apparatus to sweep, flush and clean city streets long has been apparent, and not a few inventors have turned their minds toward a solution of the difficulty. Most of these inventions, however, use a suction sweeper of some kind or another, in which the suction is created by a blower, but the great drawback of this kind of apparatus is the fact that it is only capable of handling dry dust.

To overcome this handicap, a new motor street cleaning apparatus, manufactured by the Emerson Contracting Co., of New York City, has been evolved and recently has been demonstrated to the heads of the various departments interested in the work. It is constructed on the endless conveyor plan, in which the dust, dirt or mud, is picked up by a revolving brush and deposited upon an endless belt which carries the sweepings into the body of the car. The machines are made in two sizes, one using a "40" Schlosser motor and a dumping body capable of holding five cubic yards, fitted with a broom five feet wide, while the other is built on a Hewitt "ten ton truck" foundation, utilizing the same motor, transmission and axle, and wheels, and fitted with a dumping body holding ten cubic yards and with a nine foot broom. The weight of the smaller sweeper is three tons, without load, and that of the larger model eight tons.

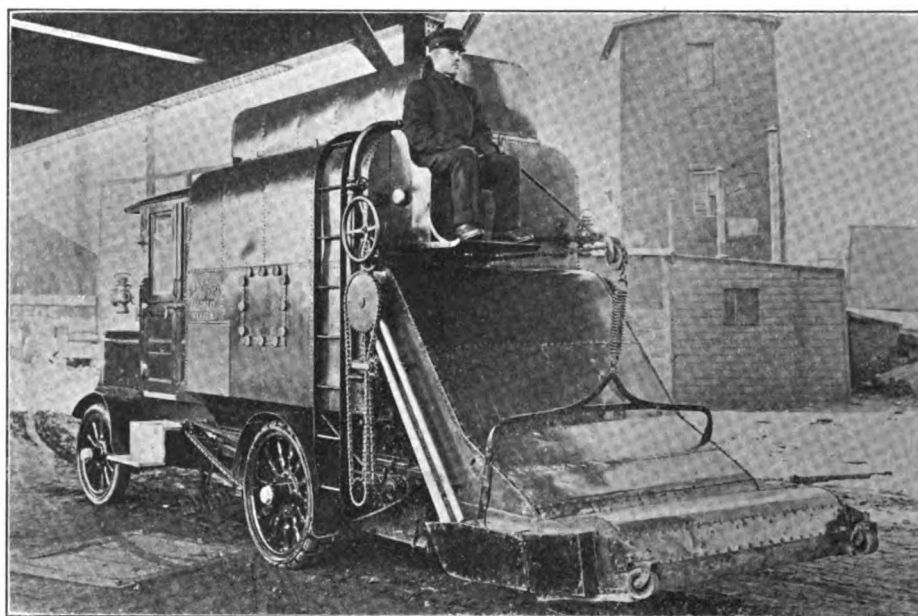
As shown by the accompanying illustrations, the sweeper is manned by two men, one driving and steering the machine from the seat, and the other manipulating the sweeping device from his seat in the rear. By means of a lever the latter can lower the revolving brooms until they scrape the ground. The dirt is thrown backward and upward, falling upon an endless belt which carries it to the top of the inner compartment. As the whole conveying and sweeping mechanism is completely enclosed,

flushing purposes over the other types now on the market is that it will clean 1,000 square yards with 40 gallons of water, as against 400 to 650 gallons used by other machines, and wet sweepings, too, are taken up into the machine just as expeditiously as are the dry. No sweepings are washed into the gutter, catch-basin, or sewer. This latter advantage is one which particularly appeals to city departments confronted with the difficulties of keeping the sewers free from obstructing debris.

The Emerson company does not intend to sell the machines, but to operate them under a contract arrangement, at so much per every thousand square yards of city streets swept and flushed.

England's Imports Far Exceed Exports.

While Great Britain's exports of motor cars increased during last year, its imports of foreign-made machines still exceeded them by \$10,031,265, the figures being \$23,063,280 for the imports, and \$13,032,015 for the exports, during the twelve months ending December 31, 1910. During that period there were imported 11,069 cars and chassis, valued at \$15,557,775, and parts to the value of \$10,115,365, making a total of \$25,674,140. Of these values \$2,160,860 represent the



FIVE-FOOT SWEEPER BUILT ON THREE-TON CHASSIS

there is practically no dust raised, thus avoiding the spreading of germs, and doing away with other objectionable features of the present-day method of cleaning streets. The machines, when filled, can be driven to the nearest dumping station, emptied, and the work resumed. Connected with the mechanism for handling dry sweepings there is a tank holding 250-650 gallons of water, according to the size of the sweepers, with which to flush the street. One of the claimed advantages of the machine for

value of re-exported cars and parts, leaving the net imports \$23,063,280. During 1909, the imports were 8,521 cars and chassis, value \$12,723,245, and parts valued at \$8,859,800, a total of \$21,583,045. In the twelve months of 1909 the exports of British-made cars, chassis and parts were valued at \$7,818,025, which amount was almost doubled during 1910. The figures for the latter year show exports of automobiles and parts valued at \$13,032,015, representing a gain of 66.6 per cent.

VARIATION OF THE SLIDING VALVE

British Ingenuity Evolves Another Engine of that Type—Wherein It Differs from the Knight Valve.

Hitherto engines of the sliding sleeve type have been considered useful only in small powers, owing to the difficulties of lubricating and cooling the valves, but in the Dome engine, which is a recent British innovation, it is claimed that these difficulties have been overcome so successfully that very large motors can be built. Indeed, the Dome Valve Gas Engine Co., of London and Birmingham, which is producing the new engine, is preparing to undertake its manufacture of quantities in sizes up to 5,000 horsepower. The motor has the further distinction in its class of being the first to which successful air-cooling can be applied.

With slight modifications in detail, the Dome engine is used for motorcycles, automobiles and small marine engines, aeroplanes and stationary plants. The first-mentioned class, of course, is air-cooled, but the others are of the water-cooled variety and in many ways resemble the prototype, which is the well-known Knight engine. Like that engine, the cylinder is surrounded by two concentric sleeves, in each of which a pair of rectangular port openings are formed, which correspond in size and shape with the intake and exhaust ports at the upper end of the cylinder. In action, the sleeves are made to travel up and down, their motion serving to cause the ports in the two sleeves and in the cylinder walls to register successively on opposite sides, thus providing for the carrying out of the familiar Otto cycle.

Unlike any other form of sleeve-valve, the Dome arrangement is such that the valves, instead of traveling in the cylinder bore itself are mounted in a separate annular chamber, in which they are a running fit. The sleeves themselves are of cup-shaped form, whence the distinguishing name of the design, and completely hood over the top of the cylinder, being themselves enclosed by an outer shell. The space between the cylinder walls and the valve chamber being water-jacketed, it follows that the sleeves are not subjected to high temperatures, and that lubrication therefore can be maintained with corresponding facility.

In the accompanying illustration Fig. 1 shows the form that has been adopted for automobile engines. The arrangement of the crank case, with respect to the oiling system and valve motion shaft, are much the same as in the standard form of motor. The valves are actuated by short cranks, or eccentrics, however, instead of by cam motion, this being necessary as power is

required to move the valve sleeves in both directions and as their motion is uniform, not requiring the quick-return which is essential in poppet valve construction. The manner in which the push-rods are con-

necting the valves. For this purpose an overhead motion shaft is employed, thus dispensing with the push-rods and their guides and housings and also simplifying the connecting mechanism. The general construction also is considerably lighter than is the case in the other.

Clark's Ideas of Gasolene Trucks.

On the theory that motor truck buyers ought to have a pretty good idea as to their precise needs, and recognizing that a majority ruling at present favors the four-cycle type of engine for motor truck service, Edward S. Clark, of Boston, Mass., has brought out a new commercial vehicle in which he gives his customers an option between motors of the two classes. His own very decided preference is for the two-cycle engine, however, and the regular stock models are equipped with such an engine, of his own particular design and construction.

This particular Clark truck, which is of three-ton capacity, is not to be confused with two other products that have been exhibited at the various shows this year and which are made in the states of Michigan and Illinois, respectively. Clark has been building automobiles in a quiet way and mostly for local consumption for the past 12 years. The present effort is noteworthy quite as much by reason of the fact that it is gasoline driven as that its motor is of the two-cycle type, for all Clark cars and trucks built hitherto have been of the steam persuasion.

The motor is rated at 35 horsepower, and is an extremely neat version of the block principle of construction, its manifolds and transfer ports being formed integrally with the main casting, while its upper crank case section is webbed out at the sides to meet the sub-frame. Timken roller bearing jack shaft and axle equipment is used and double side chain drive to the rear wheels. The power transmission from the motor to the counter shaft is through a cone clutch, propeller shaft and selective gearset, which is mounted in a housing bolted fast to the jack shaft casing. The chassis is solidly put together and mounts an open express body.

Perils of Soldering Fuel Tanks.

The danger of trying to solder a gasoline tank which has not been thoroughly emptied of the fumes clinging to the inside, again was demonstrated last week in Philadelphia, Pa. Philip Schwartz, a machinist in the garage of A. M. Quinn, 1420 North Twentieth street, endeavored to solder a leaking tank, and as a result is in the hospital in a critical condition. The tank exploded with tremendous force, fragments of the metal flying in all directions while the main part crashed into the ceiling, remaining embedded therein. Schwartz was hit in the head by one of the pieces, the latter penetrating the skull.

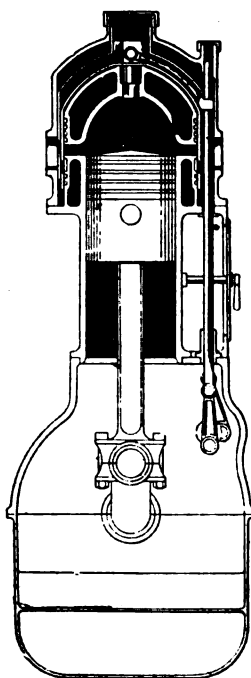


FIG. 1

nected to the center of the "domes" by means of overhanging arms, is plainly indicated.

A lighter form of motor, which is in-

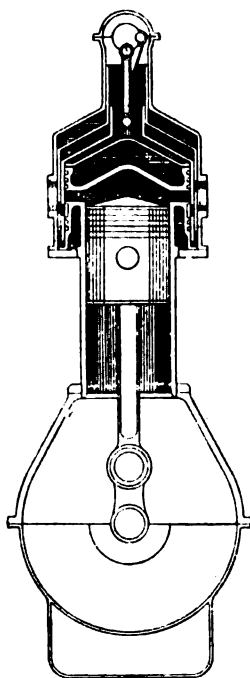


FIG. 2

tended primarily for aeronautical use, but which, of course, is applicable to other purposes as well, is shown in Fig. 2. The principal difference between this and the type before mentioned is in the method of

Care that Increases Efficiency of the Chain

When efficient action is to be expected of chain driven vehicles it is imperative that chains and sprockets be maintained in as good condition as is possible; their proper maintenance is overshadowed in importance only by the necessity of a correct fit between them. It often happens, however, that drivers who are otherwise extremely careful in the handling of the cars in their charge and in the adjustment and maintenance of other parts of their vehicles are negligent in respect to the chain equipment and that the resultant decreased efficiency of the cars, unwittingly, is charged to other causes. Being now in far greater use on commercial vehicles than on pleasure cars, the chain naturally is being put to heavier use than ever before, and as detailed costs of upkeep and operation also more largely enter into the case, the need for intelligent treatment has increased in corresponding measure.

While it is fair to assume that a car new from the factory will have correctly fitting chains, it by no means follows that the new chains which in time become necessary and which have been applied by a driver, inexperienced in comparison to a factory expert, will fit. However, allowing that the cases of misfits are in the minority rather than in the majority, the greatest trouble lies in improper care and lack of correct adjustment caused by wear.

When chains become worn they run slack. Slackness also is caused by their stretching a certain amount after they have been in service a short time. The elongation is due partly to an actual stretching of the side plates and partly to wear in the rivets. Wear of the sprockets also contributes to the slackness, though wear in the chains is the cause of the greatest part of it. As it is impossible to eliminate wear entirely the logical conclusion is to control it as far as is possible.

Several makes of pleasure and commercial vehicles now have their chains enclosed in oil-tight cases, but on the majority of cars the chains are left fully exposed and thus collect a considerable amount of dirt and grit from the road, though why this should remain the case is difficult to say. Of course, a chain case involves additional expense, but the benefits that accrue make it appear well worth any reasonable price. The chains and sprockets are fully protected and run in an oil bath, and, as has been done in several makes of cars, the cases may be made heavy enough to perform the functions of distance rods.

In the heyday of the bicycle attempts were made to keep the chains of bicycles

clean by fitting small brushes which were in continual contact with the chains. That they failed to prove as efficacious as was expected was demonstrated by their early disappearance and even were they in general use today it is a question whether, under the vastly different conditions obtaining between bicycles and motor trucks, a similar apparatus would be of any use on the latter.

The obvious way out of the difficulty and the only one left in order to reduce to a minimum the wear caused by road dirt is to clean the chains thoroughly after each day's work, or more often if the conditions warrant. Of course, a certain amount of wear is bound to take place, and if unchecked will result in the necessity for the replacement of both the sprockets and chains. If given timely attention, however, this drastic treatment with the entailing expense may be put off for a considerable length of time and with proper care need not be resorted to until the last vestige of usefulness has been gotten out of the parts.

Probably the question of lubrication comes first in the reduction of up-keep cost. The objection to using light-bodied grease or oil is that either tends to collect dust and dirt, while on the other hand if too heavy grease is used it tends to "ball up" and drop off in lumps. The theory has been advanced that with roller chains no lubricant is required except on the rivets, but this is open to the objection that there is always mud with which to contend, and while it would tend to drop off a greasy chain it would adhere to a dry one. All chains should be taken off regularly, and after having been soaked in kerosene for several hours thoroughly brushed with a stiff brush. Fairly heavy grease, mixed into a stiff paste with finely powdered graphite, makes a good lubricant for chains of the block link type and should be put on sparingly at regular intervals. Roller chains, after having been cleaned by soaking in kerosene, should be boiled in melted paraffine wax and hung up to drain and dry. The action of the wax is to permeate the interstices of the chains, and as it becomes quite hard when cold it requires a long time to work out.

As regards wear in the sprockets, those on the counter shaft are the first to show signs of use, owing to their being the smaller of the two pairs. Not infrequently they are worn until the teeth are hook-shaped. Sprockets which are worn to such an extent impose undue stresses on the chains and rapid deterioration and breakage are the natural results. In some makes of

cars the sprockets are made reversible, and in that case they may be changed about and the opposite sides of the teeth used. Where this procedure is not possible the teeth should be ground or filed into a semblance of their original shape. One or two such treatments, however, will be all that are possible and the sprockets will then have to be replaced. Though the rear sprockets do not wear as rapidly as do the front ones, they should be watched just as carefully and treated in the same manner as the others. Chains also may be turned over or end for end, though it is obvious that no advantage will be obtained in turning chains of other than the block type.

Chains should leave the sprockets freely without whipping or snapping, and any inherent tendency to climb the sprockets should be checked at once by careful adjustment. Though the method of adjustment may not be exactly the same in any two makes of cars, the end attained, that of varying the distance between the driving and driven sprockets, is the same regardless of the system in use. The most common method of lessening or increasing the tension on the chains is by shortening or lengthening the distance or radius rods, these being made in two parts and provided with turnbuckles for the purpose. If chains are permitted to run too slack there is danger that they may ride the sprockets and break, or they may come off and, becoming wrapped around the driving sprockets or the road wheels cause damage to the car. On the other hand if they are run too tight a loss of power ensues and bearings receive an undue strain which may result in their heating and seizing. In any case the wear is excessive and a happy medium between too tight and too loose must be found. While there is no set rule for adjustment, if the top half of the chain be held taut and the whole adjusted till the sag in the lower half is about one inch out of the straight they will run correctly.

Though both chains should be equally tight, there will be no difference in the proportion of work done by each provided there is a differential in the counter shaft, if one be slightly tighter than the other. It is of much greater importance that the parallelism of the counter shaft and the rear axle be maintained than that the chains be kept equally tight. The necessity for parallelism between these two members is readily understandable. If they become deranged the sprockets are thrown out of line and the chains will climb and break.

Owing to the construction of the differential it is possible to run a car with

chain broken if one of the drive sprockets be lashed firmly to the frame of the car. In this event the other sprocket will revolve at twice its usual speed and the strain on the differential is very great. Running with only one chain should only be done as a last resort, however, and then only for short distances and with the car in low gear.

What Foreign Workmen are Paid.

Old-world ideas as to the relative value of hand labor, as contrasted with that performed by automatic machinery, are a constant source of amazement to those who are familiar with the accurate results that it is possible to obtain by mechanical means. But one point that seldom is taken into account, despite its indubitable effect in fostering the conservation of the average foreign manufacturer is the wage question. Not only is hand labor of the ordinary variety cheap abroad, but the skilled labor of intelligent and experienced mechanics is so inexpensive, relatively speaking, as to be comparable to the cost of machine production, when no question of quantity or speed enters into account. Thus in England the most skilled and industrious artisan is not able to make over \$14.60, or £3 a week, as against \$20, \$25, \$30 or more which the American manufacturer must pay for a first-class toolmaker. Consul Stead, of Nottingham, who has made a recent investigation of conditions obtaining in the British automobile industry, is responsible for the following additional figures as to labor conditions in the local industry:

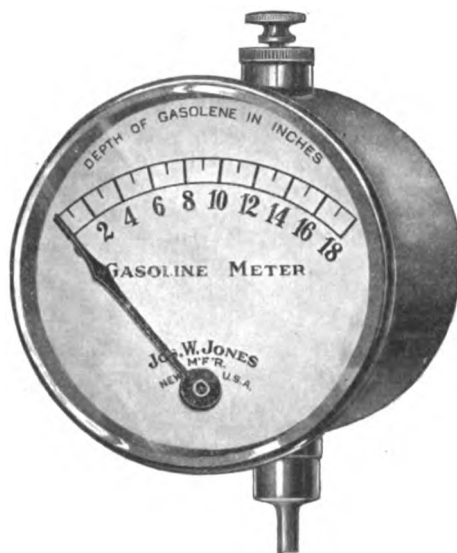
"Boys of 16 years start at 6s. (\$1.46) per week to learn the trade and receive a yearly raise of 2s. (48 cents) per week until grown, when, at 21 years, they make 25s. (\$6.08) per week as lower man's wages. The medium mechanic who understands the mathematics of his trade earns £2 to £2 10s. (\$9.73 to \$12.16) per week."

Jones Evolves Dashboard Gasolene Gauge.

To the comprehensive line of Jones speedometers and other accessories marketed by the United Manufacturers of New York, there recently has been added the Jones gasolene gauge, which is a neat little dashboard instrument intended to show the amount of fuel in the tank. "Out of sight, out of mind," is perhaps no more forcibly illustrated than in the case of the motorist and his gasolene. The latter is forgotten, or a miscalculation is made, and while the value of walking as exercise is universally conceded to be par excellence, no motorist relishes exercise of that kind when it is necessitated by a lack of gasolene. The Jones gasolene gauge, which is the invention of Joseph W. Jones, obviates such troubles by keeping before the driver at all times an accurate indication of the number of inches or gallons of gasolene in the tank.

The gauge, which is shown in the ac-

companying illustration, is attached to the dash and a small copper tube runs from it to the tank where it enters at the top and continues downward through the gasolene to a point near the bottom of the tank. There is nothing in the tube except air, and as there is no outlet at the gauge it is obvious that the gasolene can not rise in the tube beyond a certain point which is governed by the height of the gasolene in the tank. After the apparatus has been installed and connected a few strokes of a small pump integral with the gauge serve to fill the tube with air and exclude the gasolene at the lower end. Then when the tank is full a column of gasolene rises in the tube and compresses the air above it,



the degree of compression being transmitted to the hand on the dial by means of a diaphragm and suitable linkage. Similarly as the tank is emptied the air pressure in the tube becomes less and causes a corresponding alteration in the position of the dial hand. The apparatus may be employed on any make of car in which the gravity system of gasolene feed is used regardless of the position of the gasolene tank and also is applicable to any kind of storage tank where liquid depth indicators are required.

Yoke and Rod Ends of New Design.

Extending an already liberal assortment of drop-forged parts and fittings the Billings & Spencer Co., Hartford, Conn., has just brought out a new form of yoke and rod end. The new design is one in which a large radius of action is combined with maximum strength and minimum weight. The parts are supplied in a variety of sizes, either in blank, milled or assembled and the short stub end is rounded to facilitate electric welding.

They have the oval section in the fork arms which makes for both rigidity and neat appearance and are provided with liberal bosses. The wide radius of action is secured by an unusual depth of clevis which constitutes a new feature. The strength of the parts, of course, is superior to that of

the hand-forged or machined fittings, owing to the compression of the fibers under the impact of the drop hammer. A point equally in their favor is the uniformity of size which the method of their manufacture ensures.

Telephone List that Helped Sell Cars.

How to impress one's customers is a problem that sometimes causes dealers to resort to all kinds of odd tricks, but rarely does anyone succeed in creating an immense prestige by the mere display of a telephone list. The exception to this rule is the automobile dealer in Paris, France, who recently fastened alongside of his telephone an imposing list of motorists, beginning with the King of Belgium, and containing the names of nearly all the high aristocracy and officials of the French republic. Naturally, people calling at his place of business and seeing the list ready for instant use, took it for granted that all these well-known persons were customers of the shrewd dealer. Very few made direct inquiries, and if any person was curious enough to ask in a kind of "awe-struck" whisper whether all the names were those of bona-fide customers, the dealer answered calmly: "No, not all; but they might become some day, and therefore I have their telephone numbers ready for instant use." It is said in the French capital that no less than a hundred people bought cars from this clever dealer on the mere strength of his "imaginary and prospective" clientele, without investigating the facts.

Turpentine for Cleaning Aluminum.

In cleaning aluminum parts, ordinary turpentine is much more efficacious than kerosene or gasolene and parts so cleaned have imparted to them a sort of lacquered appearance. The modus operandi is to wet a rag or small bunch of cotton-waste with turpentine and go over the parts thoroughly removing all foreign matter. Subsequent accumulations of dirt or grease will not adhere as readily to parts which are cleaned in this way as when gasolene is used.

Trucks that Require Water-Tight Floors.

Commercial vehicles which are destined for the handling of liquid or semi-liquid commodities should be provided with a floor of water-tight construction to prevent such foreign matter from getting into or on the mechanism of the vehicle. A water-tight floor is particularly necessary in those types of vehicles in which the motor is located under the body of the car.

When Soap Should Not be Used.

Owing to the fact that varnish requires some time to "season" thoroughly, and while doing so is easily affected, new cars should never be washed with anything but pure clean water. Kerosene or soaps should never be used in the washing water until the car is three or four weeks old.

Accessibility that Affects Truck's Upkeep

A good deal has been said about the advantages of accessibility as applying to the mechanism of motor trucks, merely on the principle that accessibility enhances the value of the machine by simplifying its upkeep. The fact of the matter is that accessibility, like other factors in the motor truck equation, is measurable in dollars and cents value. This may not in the least alter the real considerations involved, but it does make them a trifle easier to understand. While there is a certain technical interest involved in discussing the simplification of any mechanism the subject becomes generally understandable when it is translated into the coin of the realm.

Totally unlike the usual attitude toward the pleasure car, the modern view of the commercial vehicle is chiefly that of a contrast in monetary values. Whatever of science and engineering may be involved in its constitution the man in the street is coming to look on the automobile truck as a means of business economy. Therefore whatever merits or demerits any given vehicle may possess must be put to the money test be clearly understood.

As far as accessibility is concerned, this is the point: A liner for a connecting rod bearing is worth about ten cents. To remove the bearing cap, inspect the journal and bearing, insert the liner, replace the cap and adjust the bearing, can be done by a good mechanic in, say, half an hour, provided no refitting of the bearing is necessary. The amount of labor involved in gaining access to the bearing varies with the design of the motor. In some designs it is possible to get at the crank shaft immediately upon removing a hand hole cover in the side of the crank case, the time necessary for the job outside the actual work on the bearing itself being not over 20 minutes more at the very outside. In other cases it is necessary to drop the lower half of the crank case, when perhaps another hour must be added to the time required for the insertion of the ten-cent strip of sheet metal in its proper place. The money value of accessibility in a case like the one in point may be said to be the cost of the shop's time plus one man's labor for one hour, or maybe 40 cents.

The taking up of a loose rod end, however, is the sort of adjustment that ordinarily would be undertaken only when the vehicle is off duty, on a Saturday afternoon, a Sunday or a "rainy day." Usually, too, it would be undertaken in connection with a number of similar repairs of the sort that may be allowed to accumulate for several days or weeks without impairing the ac-

tual serviceability of the machine in its ordinary duty.

But suppose a little nodule of accumulated sediment and rust were to be dislodged from one of the water jackets and find its way to the pump in consequence of the vibration of the machine while on the road. The result will be, most likely, that the pump driving shaft will be twisted off, or else that the coupling will give way. Some designers provide for such a contingency by making very liberal allowances for pipe area and using a centrifugal pump with good clearance from the casing. Under such conditions, it may be that sufficient water will flow by natural, or thermosyphon, circulation to keep the engine from overheating, so that the truck may be able to get home under its own power.

More frequently, however, when the pump is stopped the engine must stop within a few minutes, and then the question of accessibility becomes a momentous one. With such emergencies in mind, a few designers have had the forethought to provide shearing pins in the pump driving line which are designed to break before any material damage can be done to the system. In such a case it is only necessary to locate and remove the obstruction, insert a new shearing pin, which should be carried in the tool box, and proceed. By a little manipulation of the disconnected shaft and a little fishing around with a bent wire, a handy man most likely could remove the source of difficulty and get on the road again in from half to three-quarters of an hour.

If it was necessary to fit up some kind of a "jury rig" to drive the pump after it was cleared, another half hour might be consumed. If it proved necessary to dismantle the pump entirely in order to remove the obstruction, or to abstract the impeller from the casing in order to afford a free flow for the water on the thermosyphon principle, the entire job might require an hour or an hour and a quarter. That is, supposing the location of the pump was such that it could be got at without removing any other mechanism; supposing, for instance, that the pump and magneto were located tandem on the left side of the motor and could be got at without further difficulty merely by raising the hood.

But supposing that the pump had been neatly concealed behind the radiator, on the other hand, so that in order to gain access to it it would be necessary to dismount the radiator. With some methods of radiator mounting this would not prove so very troublesome after all. A radiator that

is carried on trunnions may be removed in 15 or 20 minutes, while one that is spring mounted, if arranged with that in view, can be disconnected on one side, after the pipe connections are uncoupled, and swung around like a door, less than ten minutes being sufficient for the necessary labor. Those who are at all familiar with the older methods of radiator mounting are well aware that these are favorable examples, however. Under some conditions it may require from half an hour upwards to get the radiator off, and as much more to replace it. This time, of course, must be added to that necessary for the actual work of repairing the pump.

Assuming that the driver is able to locate the difficulty at once and is competent to perform the necessary work as expeditiously as possible, it is thus evident that the value of accessibility in the case in point is represented by about an hour's time on the road, regardless of the shop time involved in making complete repairs, supposing that conditions are such that only a temporary remedy can be applied on the road. The value of time on the road, of course, may be variously estimated. The most natural rating to use is a proportion of the actual cost of running.

Thus if it costs \$8 a day to run a large truck, the cost including all legitimate expenses such as interest, depreciation, maintenance, supplies, wages and garage and other "overheads," the value of an hour's time will be 80 cents, assuming an average day's work to be performed in ten hours. But it seldom happens that the actual running cost is all that is involved. The real loss is represented by a proportionate deduction from the earning power of the vehicle. This depends very much on circumstances. Thus a truckman operating one or two vehicles and dependent on them for his entire income may rate their potential value to him at \$15 or \$20 a day, while a furniture mover with the aid of a couple of trucks and their crews may be able to take in \$100 or more a day. The real value of the truck's time, therefore, may run from \$1 to \$5 an hour in addition to the upkeep expense.

Having established the principle that accessibility has a certain money value, it is hardly necessary to carry the point further. What is important to bear in mind is that accessibility is of two sorts, the sort that applies to repairs or adjustments that may have to be made on the road or during working hours, and the sort that concerns shop repairs and adjustments. Fortunately the number of points about the average

machine that have to be considered in designing for accessibility on the road is comparatively limited.

Thus the mounting of the engine under a conventional type of hood in front of the driver's seat commonly is regarded as securing the acme of accessibility, while the mounting of the engine in a compartment below the seat is held by many engineers to render the engine particularly obscure when it comes to making adjustments. That this does not necessarily follow is evident in cars of the first class in which no single auxiliary can be dismounted without removing or at least disturbing some other and in cars of the second class in which practically everything is readily "gettable."

Without expressing any particular preference for either method of arrangement it is possible to show where the same careful designer could render both types equally accessible. In the second case it is necessary only to mount the control mechanism on a framework entirely clear of the engine and preferably in front of it and to make the driver's cab demountable in its entirety in order to render the arrangement the practical equivalent of the engine-in-front arrangement, insofar as accessibility alone is concerned. Certainly no arrangement is wholly commendable that does not provide ready means for getting at all parts with a minimum loss of shop time and of removing the engine in its entirety without serious difficulty.

Here it is necessary to take account of the demountable power plant. The underlying principle involved in such an arrangement, of course, is perfectly sound, but there is some danger that the over-zealous designer may be led into error in his eagerness to render the motor easily removable.

What, for example, is the particular advantage of a demountable power plant that is so constructed that it must be demounted in order to replace a spark plug comfortably or in order to put in a new valve? Certainly both of these operations are of the sort that may have to be performed during working hours, when truck time is at a premium. Likewise it is true that with proper arrangement of the parts neither of these operations should necessitate the removal of the engine from the chassis.

The chief advantage of the demountable plant is to simplify the exchange of complete units when serious defects have arisen in service or when overhauling is necessary; for ordinary running repairs demountability of the entire plant cannot be said to be of any particular value. For this reason, therefore, it is held by some authorities that the demountable plant is useful only in effecting economies in layup time. This view does not question the utility of the demountable plant in the least, it must be understood; it merely postulates that demountability must not be secured through any sacrifice of accessibility on the road.

Thus far the accessibility of the engine alone has been considered, but experience teaches that transmissions frequently require attention, even during working hours. What, then, of a clutch or brake mechanism that can be reached only by dint of most expert manipulation of the down-in-the-mud variety or by lifting the floor of the loading platform? In the one case much time is apt to be lost through the clumsiness of the driver who is unaccustomed to working in a recumbent position, while in the other no work can be done until the load has been removed, with consequent loss of time.

Fortunately most transmission repairs are of such a nature that they can be performed in the shop. Sliding gears require practically no attention in the ordinary course of events save for an occasional cleaning and relining of the shafts. As gears may be stripped, however, even with the most careful of handling under ordinary conditions, it is advantageous to have the mounting arrangement such that the entire box can be dropped without much difficulty and without the necessity of disturbing the load. Clutches and transmission brakes, on the other hand, not infrequently require attention on the road and on this account are most economical when constructed in such a way that they can be adjusted from the side or from underneath the chassis without serious inconvenience.

Emergency brake adjustments and those pertaining to the radius rods of chain driven chassis and the torsion bars of shaft transmissions, likewise require occasional attention on the road and should be constructed in such a way as to minimize the incidental delay. In particular the arrangement of oil-tight chain cases, when provided, should be such as not to hamper the inspection and care of the chains and sprockets.

Another point of importance is the arrangement and location of grease cups and other lubricating devices. To employ a grease cup for every important articulation in the entire chassis is a most excellent practice which designers rapidly are adopting. But it obviously is needless to apply such devices when they are mounted in inconspicuous and well-nigh inaccessible places. The wise practice of one well-known builder of large trucks may be instanced as a noteworthy example in this respect. The clutch throw-out yoke invariably requires a good deal of lubrication, yet its location is such that it is apt to be out of mind, as well as out of sight, of the average driver. With this in view, the builder in question has taken the precaution to instal a grease cup on the outside of the chassis frame opposite the bearing, connecting it to the proper point by means of a length of flexible metallic tubing. The frequent replenishment of the grease in the bearing thus may be carried out from the side of the machine, and is assured by the

rather conspicuous location of the cup.

One other matter to which the up-to-date truck builder is giving very serious attention, with an eye to reducing the time lost in making repairs, is that of tires. Delivery wagons and light trucks which have pneumatic tire equipment commonly are fitted with demountable and quick detachable rims—as should be the case invariably. The recent development of the demountable solid tire affords a similar advantage to the builder of larger and heavier vehicles. It is not that tires require frequent replacement: the consideration involved is that better economy is secured when the tires are kept in prime condition at all times, as can be done only when cuts and bruises are attended to as soon after their occurrence as possible. To do this it is necessary to make replacements at irregular intervals and at times when it is impossible to lay up the truck. Hence the demountable equipment is recognized as one of the true essentials of economical equipment.

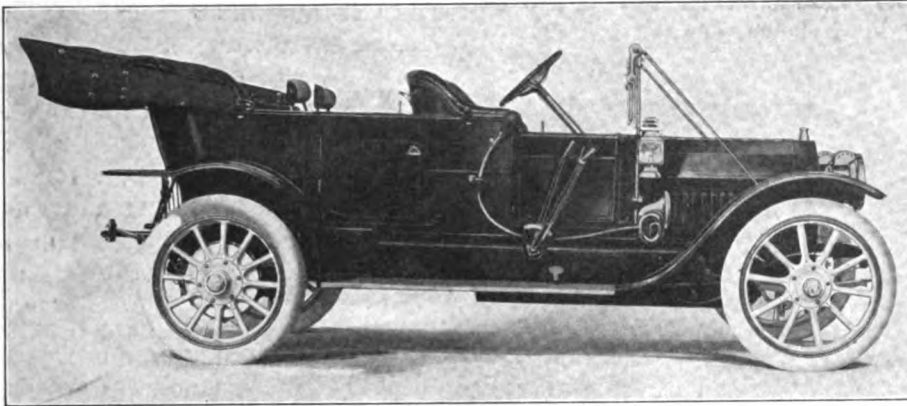
It is a fortunate thing for the welfare and growth of the industry that commercial vehicle builders of the better class are viewing the requirement for accessibility in the right light and are making proper distinction between the necessities of accessibility for adjustment and accessibility for repairs. Motor truck maintenance always will seem extraordinarily high so long as it is judged by comparison with the cost of maintaining other classes of machinery. In time users of trucks will come to understand that it must necessarily cost more to maintain a power plant that undergoes the racking tortures of the highway than it costs to maintain similar mechanism when mounted on a bed of solid timber and cement. But truck maintenance will continue to be higher than it should until designs have been modified to the point where a balance of proper economy is struck between accessibility and interchangeability; until adjustments, replacements and repairs can be made with a minimum loss of time. For it is the time factor that really determines the success of the average truck equipment.

It has been shown in various ways that while the very use of motor trucks may constitute an economy over horse haulage systems by increasing the size of load units and accelerating the average rate of transport, the real economy involved depends in large measure upon facility in load handling. Upon the ease with which adjustments and repairs can be made, however, depends the relative success of one motor truck system as compared with other motor truck systems. Consequently the wise consideration of accessibility is a matter that most vitally concerns the truck builder in meeting competition, and one of even greater import to the prospective user in making his choice of several systems, each of which in other respects may appear to be equally suited to his requirements.

CONCERNING THE WELCH-DETROIT

One of the Impressive Cars that Comes from Michigan—Features that Distinguish It—Ingenious Pump Assembly.

Among the more rugged of Detroit's manifold automobile products is the Welch car—the Welch-Detroit, to be precise—which is now being produced in a single chassis type, known as Model T, which



WELCH-DETROIT MODEL T CLOSED-FRONT TOURING CAR

is equipped with two styles of body, namely, touring and limousine. The touring car, upon which its builders, the Welch Co., is concentrating, is of the closed-front pattern, rather impressively arranged and equipped and is of seven passenger capacity.

As the accompanying illustration indicates, it is of the more conservative order of closed-front design, the seats being of liberal dimensions, furnished with high backs, and the doors being of different heights to correspond with the difference of level between the front and rear compartments of the body. The gear shifting and brake levers are carried outside the right enclosure of the driving compartment, ample space for free movement being allowed inside the spare tire carrier. The full equipment, which is unusually complete, includes gas headlights and Prest-O-Lite tank, oil dash and tail lamps, windshield, top with side and front curtains, speedometer and clock, tire carrier, trunk rack, robe rail, horn, jack, tire repair outfit and full tool kit. The total weight of the machine with equipment is 3,700 pounds. It is suspended on semi-elliptic springs, front and rear, the rear members being of unusual length, and is fitted with shock absorbers all around as standard equipment.

The motor used is of 5 inch bore and stroke, thus taking a nominal rating of 40 horsepower. Owing to the large valve and port areas employed, however, as well as the use of long pistons and connecting rods, which help to reduce the factor of engine friction, it is said to have developed as much as 53 horsepower under bench testing

conditions. The motor is of T-head construction, with cylinders cast in pairs. It is of heavy construction throughout and of generally standard form. In one or two points it has been developed in a special manner revealing considerable forethought.

An instance in point is the pump assembly, which is made as a separate and demountable unit which takes care of the circulation of both water and oil in a very neat manner. The pump assembly is carried on the left side of the motor, below

manifold, a small by-pass from which conducts water to the jacket of the carburetter mixing chamber. The oil pump, which is entirely separate from the water pump, is bolted to the casing of the latter and driven by the same shaft. The entire group may be dismounted as a unit, if desired, without disturbing any other part, while both pumps are accessible for packing purposes.

Transmission of power is accomplished through the familiar type of leather-faced cone clutch, three-speed selective gearset and propeller shaft to the full floating rear axle. The motor and gearset are mounted on a sub-frame which runs from the cross frame member that constitutes the radiator saddle to a second cross member just back of the waist-line. The space between the main and sub-frames is enclosed by a filler strip which serves to stiffen the sills in addition to forming a dust and mud guard. The propeller shaft is enclosed in a torque tube which has a forward bearing on the shaft itself, the torsional stresses, therefore, being taken up by the universal joint in the driving line. The rear springs are shackled at both ends, the traction load thus being taken care of by radius rods.

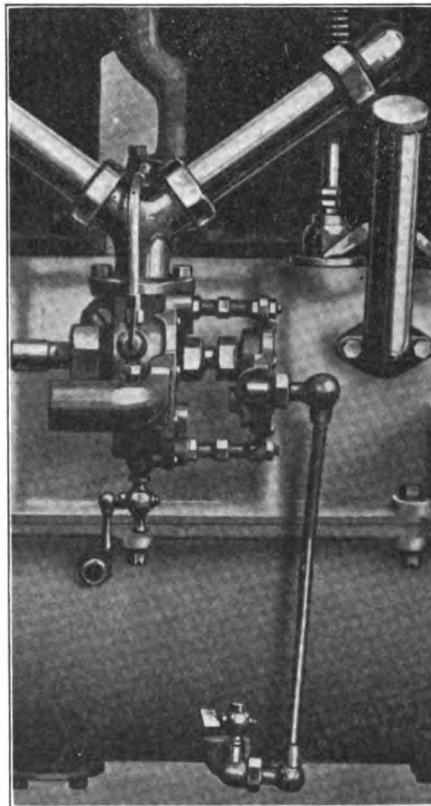
Both sets of brakes are mounted on the rear wheels, and are of the external-contracting and internal-expanding varieties, respectively. They are so arranged that the connecting rods come inside the frame, leaving the exterior of the chassis entirely free of moving parts. The brakes are balanced by means of a neat application of the bevel differential principle, the mechanism being fully enclosed by the outer sleeve of the telescopic rocker-shaft group which serves for the actuation of both service and emergency brakes.

When Dry Batteries Play Odd Pranks.

Weak dry batteries often are annoying sources of trouble. Although deteriorated from considerable use they often will give as hot a spark as when new, and the engine then will run for a time apparently perfectly. After a few miles, however, the explosions lose their force and the engine commences to labor. If the car and engine are stopped for examination the momentary rest will enable the batteries to recuperate to a certain extent so that apparently the spark has the necessary intensity. For indicating such a condition of the batteries an ammeter is essential. If upon application to the terminals of the batteries, the strength gradually goes down as indicated by the meter, the cells should be at once replaced.

Pressure that May Flood Carburetters.

On cars which are fitted with a pressure system of gasoline feed the pressure should never be allowed to go above two pounds. This amount of pressure is quite sufficient for even the steepest hill, and if it is allowed to become greater it may cause the carburetter to flood.



WELCH PUMP ASSEMBLY

MARTINIQUE'S MARKET FOR MOTORS

Conditions Promising, Says Consul Wallace, if Repairs are Assured—Poor Facilities Caused Former Failure.

"At present there is no interest manifested by the people of Martinique for motor vehicles," reports Thomas A. Wallace, the American consul at Fort de France. "It is therefore necessary for the dealer to create such an interest and remove an existing prejudice before sales can be expected. Motor vehicles possess so many advantages to meet existing conditions here that they are bound eventually to come into general use and a good market be created therefor." According to the consul conditions in Martinique are peculiar in that it is one of the few localities where the automobile has been abandoned after having gained a start. Conditions at present are more promising, he relates:

"There was at one time an automobile passenger service on two of the best highways in the island, but it did not pay. Two vehicles were used—French machines—one burned kerosene and the other gasoline; they carried from four to six passengers. There was also a private party who kept a machine. All have gone out of business, however, for the reason, chiefly, of lack of facilities for repairing and the want of chauffeurs.

"The roadways of the island are in very good condition for automobiling. They are hard and firm, made of clay and broken stone, and this clay, through the constant rains, seems to form an efficient binder. The grades are not unduly steep, the surface offers a good grip for the wheels, and should be easy climbing for an automobile. The short curves are the worst feature, but they can be made with reasonable care.

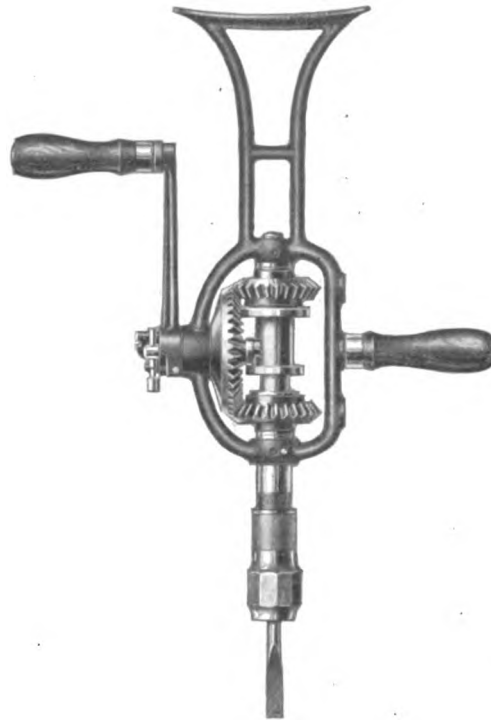
"One other difficulty for large machines is the narrow city streets, although they are quite well kept and in good condition for the use of motor vehicles. The streets are from 14 to 17 feet wide. At the crossings the ditches, 7½ inches wide, are covered with a cast-metal covering made for the purpose; it is oval on top and leaves an opening on each end the width of the ditch. A long-bodied machine would have difficulty in making the turn at the corners, and it could not be turned in the streets.

"The horses in use are inferior, are usually very small and in poor condition, because of the climate and lack of proper food. The general conditions of the island are adverse to the natural home of the horse, hence he does not thrive. Conditions warrant the belief that motor vehicles will be adopted for general purposes by the people just as soon as it is demonstrated that their use is practicable, and a good market will be eventually opened up

for their sale in this and the adjacent colonies."

For Drilling or Valve Grinding.

In order to simplify the operation of valve grinding by hand so that a continuous rotary motion at the crank of the grinding tool will produce a progressive oscillation of the valve, the Ashcroft Manufacturing Co., of New York City, has just brought out a new combination implement of the breast drill variety. To secure alternate reversals of the spindle in which the screwdriver which turns the valve is mounted, two bevel pinions are employed, one above



and the other below the driving gear which is turned by the crank. The pinions are loose on the spindle, but are alternatively engaged by a sliding clutch sleeve which is keyed to turn with it. A pin on the face of the driving gear serves to throw the clutch into engagement first with one of the pinions and then the other, the action being such that the screwdriver advances one tooth further to the right each time than it retreats to the left. By this means the abrasive is prevented from grooving the valve and seat and a uniform "bright ring" secured. The tool also is useful for drilling and screwdriving operations, it being possible to turn the spindle in either direction continuously by manipulating the clutch, while it also is possible to secure a ratchet effect.

Loose Clips that Cause Spring Breakage.

Breakage of springs almost invariably is due to loose spring clips. When a car is new the spring clips should be examined, and, if necessary, tightened every day until the stretch of the metal has been taken up. After this, they need not be examined oftener than once in two or three weeks.

GERMANY'S EXPORTS ASCENDANT

Last Year's Totals Show 60 Per Cent. Increase—Russia Best Customer—Ground Lost in America.

Statistics just made public show that the year 1910 was one of prosperity and high records in exports of German automobiles. The shipments topped the high water mark established in 1909 by fully 60 per cent., the figures being \$10,250,000 and \$7,650,000, respectively. Although the exports of commercial motor cars showed considerable gains over those recorded in the preceding year, the main increases were due to the gains in the pleasure car field, where the total exports in 1909, amounting to 1,838 cars, valued at \$4,275,000, rose to 3,398 cars, valued at \$7,230,000, in 1910, representing a gain of over 70 per cent. Besides complete cars there were exported in 1910 motors and parts valued at \$4,123,000, as compared with \$2,300,000 in 1909, an increase of 49.6 per cent. One hundred and fifty-eight motor trucks, valued at \$456,250, were exported in 1910, as against 97 trucks, valued at \$255,000, in 1909.

On the list of 25 countries enumerated in the German export statistics Russia occupies the first place with a total purchase of pleasure cars weighing 721.1 metric tons, as compared with 315.6 tons in 1909, a gain of 110 per cent. The greatest proportionate gain was recorded by Ceylon, which increased its purchases by 400 per cent. The itemized statistics published by the German government give the weight of the cars, and not the value, as the duty is calculated on the basis of so much per 100 kilograms. The value of the cars exported to the various countries will not be ready for publication for several weeks, but for purposes of comparison the following table, showing the weight in metric tons of pleasure cars exported from Germany is useful:

Countries.	1910.	1909.
Russia	721.1	315.6
Austria	574.8	405.4
Great Britain	436.8	284.4
France	242.6	234.1
Netherlands	234.6	114.3
Belgium	207.2	71.7
Brazil	168.1	18.5
Denmark	151.2	76.2
Argentina	141.3	41.4
United States	118.5	140.2
Switzerland	76.6	60.2
Italy	73.5	95.4
Netherland Indies	70.3	30.1
South Africa	59.7	29.6
Mexico	59.1	28.5
Sweden	50.8	29.5
Roumania	48.6	50.3
Finland	43.2	9.1
Australia	39.7	12.4
Norway	36.8	38.7
Spain	35.3	33.1
British East Indies	33.6	10.4
Portugal	31.4	13.3
Ceylon	27.6	5.5
Siam	24.0	19.7

Kerosene Carburation and Its Difficulties

Kerosene as fuel for internal combustion motors has been a subject for discussion and experiment almost since the day that automobiles attained practicability, and with the motor truck now looming large and still larger, it is receiving more attention than is generally thought to be the case, most of the effort being along the line of carburetter development, which apparently is the key to the situation. The low cost of kerosene, its availability in practically all parts of the world and where gasoline often is not procurable or at best in limited quantities and at prohibitive rates, its great factor of safety in handling and its consequent influence on the always important insurance situation—all these are factors that bear heavily in its favor.

The comparative cheapness of kerosene may readily be understood when it is known that from the crude petroleum from which both kerosene and gasoline are derived 15 per cent. is gasoline and from 41 to 50 per cent. is kerosene. The cost of gasoline in car lots is approximately double that of kerosene. Thus with the fuel consumption per horsepower hour only slightly greater than with gasoline the economy of using kerosene for fuel is at once apparent. In view of this fact it is the opinion of several authorities that kerosene will displace gasoline, particularly for use in motor trucks within a very short time.

Owing to the low specific gravity of gasoline it is readily gasified at ordinary temperatures. Kerosene being heavier and less volatile is not so readily gasified and requires a certain amount of heat before it is changed from vapor into a gas which is suitable for use in internal combustion engines. Though kerosene has been used in stationary engines for some time, the method of gasifying the vapor, i. e., by means of a tube or ball maintained at almost red heat and through or over which the vapor is drawn before entering the cylinders is not applicable to automobiles. As heat is essential, designers turned to other methods in which such expedients were not necessary.

In a paper read before the National Gas and Gasoline Engine Trades Association, George M. Holley, the Detroit carburetter manufacturer, says: "It is evident that the most effective way is to apply the heat directly to the liquid, in which case it gasifies readily on leaving the (spray) nozzle, providing the passage is hot into which it is sent. This may be accomplished by leading the vapor through a small bore tube surrounded by a jacket kept at a high temperature, the necessary heat being supplied

from the exhaust manifold." For the initial starting and to heat the manifold and the motor to the requisite temperature, the method described by Mr. Holley involves the use of gasoline and the ordinary carburetter, though the latter need not be large enough to operate the motor at full power. A run of one minute generally is sufficient to generate enough heat and the motor is then switched over to kerosene by means of a three-way cock, it being impossible to have both kerosene and gasoline turned on at the same time.

In several forms of kerosene carburetters the liquid is not heated. The vapor alone is heated and thereby gasified by being passed through a manifold kept hot by the exhaust gases. In the Holley design the kerosene itself is heated to approximately 200 degrees F. in the float chamber by means of a jacket through which the exhaust gases are led. The jacket extends the length of the tube containing the needle valve, the gas thus being maintained at a high temperature until it is ready to be sucked into the cylinders.

It is claimed that with the various forms of exhaust-heated manifolds employed by many experimenters, motors work well as long as they are supplied with a well vaporized mixture and maintained at a high temperature but that they do not work so well when required to work through a varying range of speeds. Even in the case of ordinary gasoline motors, "loading up," which is but another name for an accumulation of gasoline in the manifold, may give trouble especially in cold weather and at low engine speeds. This is caused by condensation and is due to the low velocity and temperature of the mixture in a comparatively large passage. It may be eliminated to a large extent by reducing the cross section of the manifold, although power would be lost at high speeds where large passages are not only necessary but imperative.

"In the case of kerosene," says Mr. Holley, "this 'loading up' is exaggerated and a minimum cross section is imperative, together with the means of keeping the passage warm." In describing the operation of his own design of kerosene carburetter he says: "The heated vapor from the vaporizing tube with its quota of air comprises about one-fourth of the total volume of the charge, the balance of air entering the system at the auxiliary valve close to the cylinders. Heat is readily absorbed by the vapor, and it therefore is unnecessary to heat the entire volume of the charge to a high temperature with the attendant ex-

pansion and loss of charge volume. With the proper compression in the motor, the action of the carburetter outlined is practically identical with that when using gasoline as fuel, except possibly in the matter of extremely low speeds with late spark. It goes without saying that the ignition in any case should be perfect and regular. With kerosene this is particularly necessary, as the missed explosion works a double mischief, viz., the loss of the power stroke and the poor combustion in the next power stroke resulting from the missed heating stroke. This is shown by the familiar vaporous exhaust."

In many of the experiments which have been made with kerosene carburetters a certain amount of trouble has been experienced with carbon. This probably is due as much to a faulty initial heating as it is to improper gasification of the charge. Carbonization is due to poor combustion of the charge in the cylinder resulting in a gummy residue being deposited. During subsequent ignitions this is baked into a hard crust. On the other hand, if proper care is taken to have the motor well heated before shifting to kerosene, the deposit of carbon is negligible even after long periods. Naturally the amount of carbon formed varies according to the fuel used and widely different results may be expected from kerosene which is obtained from different sections of the country or from different distillations from the same quality of crude petroleum.

There seems little question of the ultimate development of carburetters suitable for the efficacious handling of kerosene or other of the heavier distillates. Under present conditions, despite the attractiveness of the fuel itself, its use hardly is to be considered feasible with ordinary engine and carburetter arrangements. Although a few engineers have been successful in developing kerosene carburetters that have proved serviceable under normal running conditions ordinary power plants are not so constituted as to handle the heavier oils economically. The necessity for double fuel connections and regulating devices and special heating contrivances, of course, renders its use entirely practicable at present, though it remains to be proved that the economy gained by the use of the cheaper fuel is sufficient to offset these disadvantages. There can be no question that the really general use of kerosene awaits the development of a practical form of carburetter which will eliminate the necessity for carrying other and supplementary fuels.

TO INCREASE EXPORT OF TIRES

Uncle Sam Lending His Assistance—What His Consuls Report and Recommendations that They Offer.

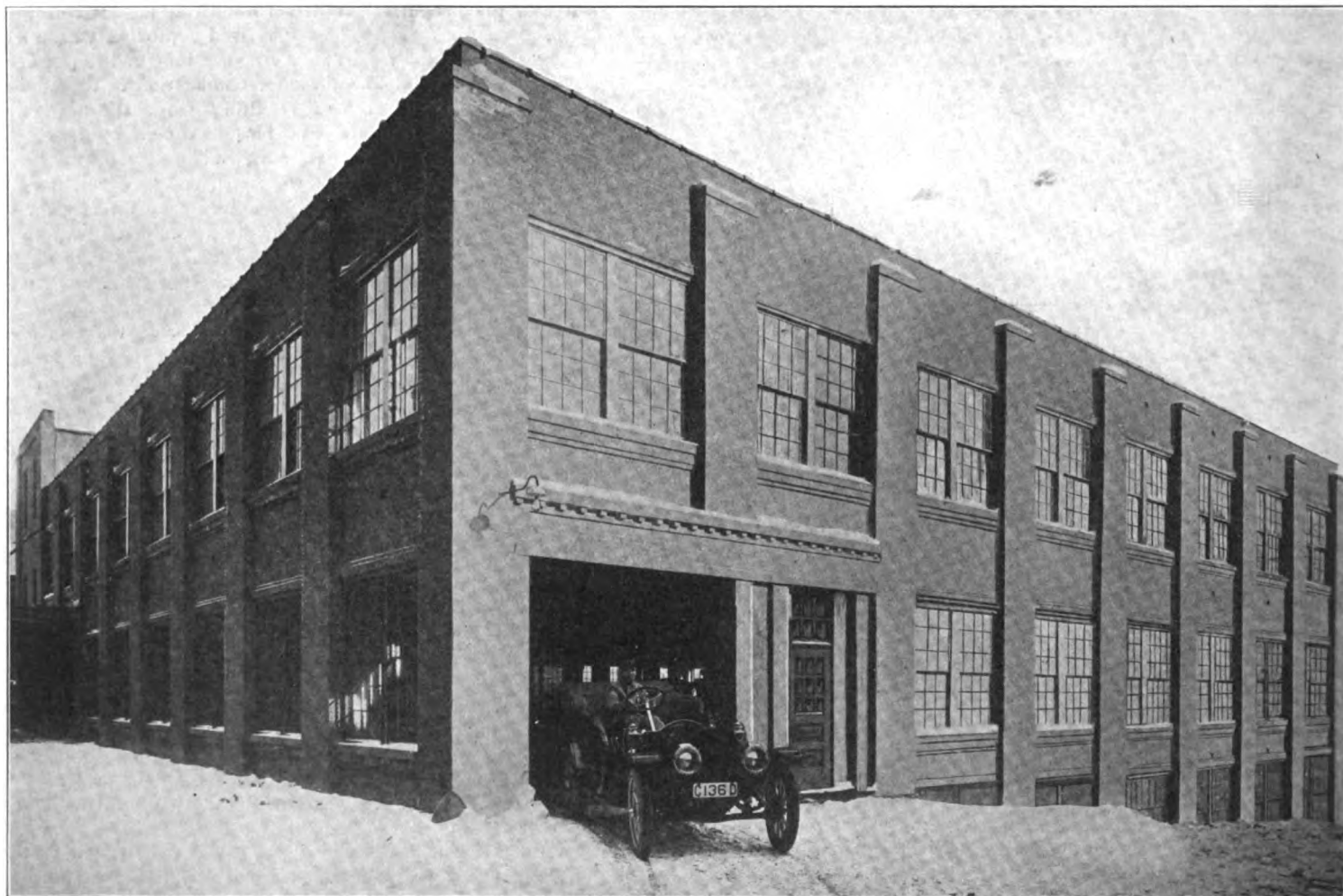
Quite naturally the American tire is following or going with the American automobile to the furthestmost part of the world. As the statistics show, the exports of tires are attaining substantial proportions, and

the local works, practically all other British as well as Continental makers have depots where they carry large stocks. "American tires also are on the market," states Consul Church Howe, "and from inquiries among the leading manufacturers and salesrooms in this vicinity I find they have met with a fair amount of success, notwithstanding the keen competition that had to be faced. There being no American depots located in Manchester, supplies are obtained from London." In continuing his

in other cities as occasion and demand necessitated, American manufacturers can, without great trouble, secure their full share of the trade."

With the increased use of American cars in Ireland, there has resulted an increased demand for American tires. That they are not as much in demand as they might be is due, in the opinion of Vice Consul Paul Knabenshue, at Belfast, to the fact that they are made chiefly according to the inch scale, while British and Continental wheels

MOST MODERN OF NEW ENGLAND'S MANY SERVICE BUILDINGS



RECENTLY COMPLETED STRUCTURE OF BROWN, THOMPSON & CO., AT HARTFORD, CONN.

in the efforts to increase the business, the United States Department of Commerce and Labor has placed the American consuls all over the world on the hunt for information designed to serve the purpose. The reports of these consuls now are commencing to arrive, one of the first being from Manchester, England.

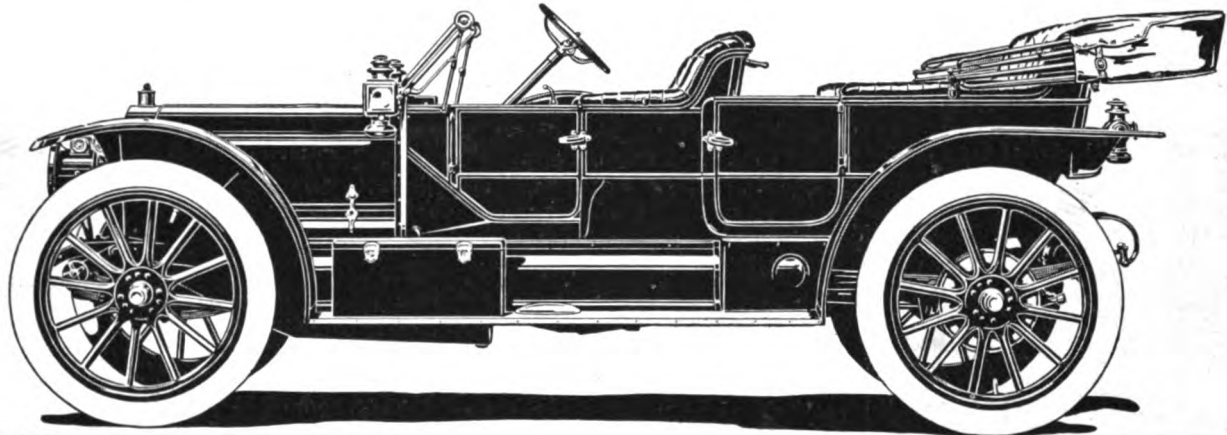
The Manchester district is the center of the rubber trade in Great Britain. All classes of rubber goods are manufactured in that city and one of the most important branches is that dealing with rubber tires. Besides the firms manufacturing tires in

resume of the conditions, he says: "To secure a larger share of the trade, it is necessary for the American manufacturer carefully to study the requirements of this large and increasing market, on entering which he must adopt measures similar to those practised by British and foreign makers, when there would seem to be no reason why the trade in American tires should not steadily and substantially increase in the near future. . . . With an experienced outside selling force, working from a central depot located either in Manchester or London, with branch stores

are made to be fitted with tires made according to the metric system of measurements. "I am informed by local motor car dealers," he says, "that American tires are considered more durable than either the British or Continental makes. . . . It is the local opinion that if the American manufacturers would make their tires to sizes suitable for local cars they would undoubtedly find a great sale in this country." He also advocates the establishment, by American manufacturers, of depots in London where an adequate supply of tires could be kept on hand.

Rambler

Motor Cars



Rambler
Sixty-five
Toy Tonneau

Forty-inch
Wheels

IF you drive a Rambler the pleasure of your outing is not converted into drudgery by tire trouble. The Rambler is the only American car equipped with the Spare Wheel. Fitted with a perfect inflated tire, it may be quickly and easily changed for a wheel with a damaged tire. No tiresome pumping in the hot sun or cold rain and you avoid the dirt so disagreeable to the well groomed. This eliminates worry about tire trouble which so often mars a trip. Every feature of the Rambler is designed for the owner's comfort, safety and convenience. The Offset Crank Shaft enables you to throttle down on high gear no faster than a man usually walks; to glide along quietly in crowded traffic without frequent gear shifting and obviates the necessity of rushing the hard pulls through sand and up grades. The Straight Line Drive saves power; big wheels and tires give added comfort and tire economy; the brakes are large enough to provide a feeling of security and the safety starting device protects you from injury while cranking.

A telephone message to the nearest Rambler representative will bring a Rambler to your door for inspection. A postal will bring you the new catalog.

The Thomas B. Jeffery Company

Main Office and Factory. Kenosha, Wisconsin

Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco, New York

"REDUCING COST OF MOTORING"

Two New Yorkers Who Own Cars Evolve Great "Club" Scheme—How the Members Might be Benefitted.

How to ride in automobiles at a mere nominal cost is a subject which probably interests nine people out of every ten. From this it may be supposed that the following ad which appeared in a New York paper last week caused something like a pilgrimage to the advertiser's office:

**JOIN OUR AUTOMOBILE CLUB
AND RIDE ALL YOU WISH
IN HIGH-GRADE CARS AT ONE-
FOURTH THE USUAL COST.**

Small amount required to pay pro rata cost of cars, which members own. Assets secure investment and members resigning can receive full amount for their share. Club entirely mutual. No profit to any one. References required. Membership restricted. Apply E. A. Rogers, 1 East 28th St.

Inquiry made by the Motor World developed that the ad does not mean exactly what it says and that those who desire to "ride all they wish" must needs be satisfied with less. They can ride all they wish but only one week in every five. E. A. Rogers, it transpires, is sales manager of the Fifth Avenue Library Society, and he himself likes to ride in automobiles, but he does not like the expense connected with their operation, and therefore evolved the co-operative plan. The idea itself is not exactly new, but Rogers has given it a few novel twists, aided by A. L. Carey, general manager of the same company.

Messrs. Carey and Rogers figure on ten enthusiasts to carry the club idea to a practical conclusion, and have divided the pro rata assessment in such a manner that each member would have to pay approximately \$500 down and \$300 per year. For the first \$5,000 thus secured Rogers proposes to buy an Orson car and a second-hand Panhard.

Someone, whose name does not appear, subscribed for an Orson car last year, pledging in the neighborhood of \$6,000 for the chassis, and now that the time of delivery has arrived he would like to be rid of his bargain, and Messrs. Rogers and Carey are willing to buy his car "for the club." For it seems that Mr. Carey, too, is a subscriber to the Orson, and as he already has a Panhard "in good running condition" he would be willing to part with this Panhard—also "to the club." So there the club would start with a Panhard and an Orson, and a chauffeur, and a lot of up-to-date equipment fit for millionaires.

All running expenses are to be paid for according to mileage covered. Each member is to have the sole right to one of the cars one week out of every five; if he wants

to permit another member of the club to use it—well and good, but no outsiders will be permitted to "borrow" it. All prospective members are to be examined as to their habits, and financial standing, and religious denomination, and—well, some more besides! Speed fiends, "booze hunters" and joy riders are to be strictly excluded.

When the plan matures—if it ever does—a regular schedule, something like a baseball schedule, will be drawn up and lots drawn for the order of succession. What will happen to the fifth man, if the third or fourth happen to "bust" the machine, is still a matter of doubt. As there is to be but one chauffeur, one of the cars would have to be driven by the temporary "owner"—who probably would get into trouble with the state department, or the local police officers, regarding the chauffeur's license. Both Rogers and Carey decry the idea of "personal profit" in the scheme, even offering to stay out of the club altogether, or merely joining as ordinary members, leaving the secretaryship, etc., to whosoever hankers for them.

Four Clubs Choose Officers.

The Canonsburg Automobile Club has been organized in Canonsburg, Pa., with the following officers: President, W. H. Richards; vice-president, George W. Ritberg; secretary, John C. Neill.

With a charter roll of more than eighty members, the Oakland Motor Club has been formed in the California city of that name with the following officers: President, Robert W. Marland; vice-president, Theyler W. Bell; treasurer, Charles H. Hogue.

At the annual meeting of the Lancaster (Pa.) Automobile Club, H. C. Schock was re-elected president, Jacob Rider secretary and Dr. W. H. Trout treasurer. Dr. J. F. Trexler and J. H. Hooper were chosen vice-presidents and F. F. Groff, A. B. Landis and George B. Kafroth directors.

Dr. Charles L. Bonifield, who has served the club as president for three successive years, was again re-elected to the presidency of the Cincinnati Automobile Club at its annual meeting last week. All other officers were re-elected. They are: Vice-presidents, D. McK. Cooke, G. W. Drach; secretary, L. S. Colter; treasurer, L. J. Merkel.

Fairmount Park Race to be Repeated.

Although the 1910 Fairmount Park race in Philadelphia caused a misunderstanding between the Quaker City Automobile Club and Mayor Reyburn, in connection with the disposal of the receipts, there is to be a similar race this year, scheduled for October 7th, over the same course as in the three previous years. Mayor Reyburn has given his approval, but this time with the specific provision that the entire proceeds, including those from the sale of programs, advertisements in programs, parking space, etc., shall be turned over to charity.

RHODE ISLANDER'S COST RECORD

Kept Itemized Account for Four Years and Finds Expense Quite Reasonable—What His Figures Disclose.

While observations as to the cost of motoring frequently have been published, it is seldom that records of the sort become available which cover such a long period as do those of G. C. Arnold, of Providence, R. I., who is treasurer of the Motor League of Rhode Island and the owner of a Franklin car. For four years Arnold has kept careful watch of his automobile expense account, with the result that after 30,000 miles of travel he found that his total expense averaged less than 3 cents a mile—2.88 cents, to be exact. That being the total distance covered and the average cost per mile from June, 1906 to January of the present year with one car, when he decided that it had served him well enough and proceeded to dispose of it that he might invest in a new machine of the same make.

The cost average is developed from careful account which the Rhode Islander has kept from the very beginning of his automobile experience, and which reveals the following total figures: Gasolene, \$185.59; repairs, \$388.74; tires, \$221.81. The cost per mile for these various items, expressed in cents and decimals follows: Gasolene, 0.61; repairs, 1.29; tires, 0.73. The daily mileage averaged between 18 and 20 per day, making the cost something under 60 cents a day. The cost of oil is missing from the items quoted, it being explained that complete record was not kept of this expense. For a total distance of 4,070 miles, however, it is stated that it amounted to only \$7.75, which would make an average of only 0.17 cents per mile, while an average obtained by difference from the total cost of 2.88 cents per mile would make it appear that throughout the career of the car its oil supplies could not have cost over a quarter of a cent per mile.

The use of the car included tours all over the Northeast and local trips in the vicinity of Providence. During the entire period of four and a half years Arnold did not meet with a single accident, and therefore no under expense for repairs figures in his statement.

Why Fire Hose Must be Avoided.

That it is a rather serious proceeding for the driver of an automobile to run over a fire hose stretched across a street was made clear to Edward A. Stowell by Magistrate Freschi in the New York City Night Court. Only the fact that Stowell proved that his windshield was so covered with dirt and dust as to make it impossible to distinguish the dim outline of the fire hose saved him from a heavy fine.

RECENT PATENTS.

977,358. Lamp. Joseph E. Allen, Chicago, Ill. Filed Feb. 14, 1910. Serial No. 543,807.

1. A lamp comprising a body formed of a single piece of glass having but one opening therein, supporting means directly secured to said body, and electric illuminating means secured in said opening and entirely supported by said body substantially as described.

977,585. Vehicle Tire. Percy B. Bosworth, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio, a Corporation of West Virginia. Filed June 9, 1906. Serial No. 320,984.

The combination with a rim having a removable side flange and provided in its base with an annular groove lying outside of said removable flange, of an elastic retaining ring transversely severed at one point adapted to be sprung into said groove in the base and to abut against the outer side of said removable flange, and fastening pins passed through said retaining ring and side flange near the meeting ends of the former, substantially as described.

977,587. Detachable Fastening for Pneumatic Tires. Percy B. Bosworth, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio, a Corporation of West Virginia. Filed Jan. 17, 1907. Serial No. 352,752.

1. The combination with a metallic rim for a vehicle wheel having a retaining means at one of its edges, of an annular holding ring adapted to afford an outer abutment for the base of the tire, and bearing upon said retaining means, a second holding ring, and a locking ring adapted to confine said second holding ring upon the rim, said locking ring being split and having its ends secured to said second holding ring by taper pins, substantially as described.

977,588. Fastening Device for Vehicle Tires. Percy B. Bosworth, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio, a Corporation of West Virginia. Filed April 18, 1907. Serial No. 368,971.

In a device of the character described, the combination of a tire-seating rim, and a wheel rim having a cylindrical external surface, of a ring secured to the inner periphery of said tire-seating rim, said ring being hollow on the central parts of its inner side and having a pair of inwardly-directed transversely convex ribs with line contacts on said wheel rim, said ring having outer edges substantially flush with the side faces of said wheel rim, side flanges projecting radially beyond the sides of said wheel rim and engaging said opposite edges of said ring, and through bolts detachably securing at least one of said side flanges to said wheel rim, substantially as described.

977,589. Fastening Device for Vehicle Tires. Percy B. Bosworth, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio, a Corporation of West Virginia. Filed April 27, 1907. Serial No. 370,625.

In a vehicle wheel, the combination of a wheel felly, a wheel rim therein, a demountable tire-seating rim having a pair of internal hollow ribs constituting the bearing portion of said tire rim on the wheel rim,

each of said ribs having its bearing face transversely convexed to secure substantial line contacts between the rims, and side flanges, at least one of which is removably secured to the felly, and both of said flanges projecting radially beyond said wheel rim and engaging the adjacent ribs to demountably confine said tire rim on the wheel against lateral displacement, substantially as described.

977,590. Vehicle Wheel Rim. Percy B. Bosworth, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio, a Corporation of West Virginia. Filed April 27, 1907. Serial No. 370,625.

1. In a device of the character described, the combination of a wheel having a felly with an aperture extended therethrough, a tire rim, means demountably fastening said rim on said felly, a tire clamping member adapted to fit in a tire on said rim, and means in said aperture and projecting inwardly of the wheel beyond the felly adapted to actuate said member, said actuating means being accessible inwardly of the felly for operation when the rim is on the wheel, said actuating means being removable from the felly without manipulation when the tire rim is being demounted from the wheel, substantially as described.

977,655. Ball Bearing Lock. Anton Kunkel, Arbon, Switzerland, assignor to The Firm of Adolph Saurer Maschinenfabrik, Arbon, Switzerland. Filed May 10, 1910. Serial No. 560,509.

1. The combination with a ball-bearing comprising an outer race ring, of a casing adapted to receive the outer race ring of said ball-bearing and having a recess with a cross channel in its middle, a steel spring adapted to be forced into said recess and to bear close on the outside of said outer race ring, and a hook forced into the cross channel in the recess of said casing and adapted to prevent said steel spring from endwise motion.

977,729. Lamp Controlling Device for Motor Cars. Warren A. Greenlaw, Melrose Highlands, Mass. Filed March 9, 1910. Serial No. 548,513.

1. A device for operating the lamps of a motor car, consisting of vertical lamp supports; a bearing for each of said supports in which said supports are movable vertically, said bearings being provided with notches in their upper faces each having an inclined wall; a member secured to each of said supports having a lug adapted to engage with one of said notches; a spring for retaining said lug normally in the bottom of said notch; an anti-friction abutment for said spring surrounding said support; and means operable by the steering mechanism for oscillating said supports and moving said lug up the inclined wall of said notch against the tension of said spring.

977,744. Brake. Edward F. Kelley, Bridgeport, Conn., assignor to The Royal Equipment Company, Bridgeport, Conn., a

Michelin

DEMOUNTABLE RIM



The Original Type

**Simplest
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nor Security Bolts**

The Bush Radiator
THE BUSH MANUFACTURING CO.
HARTFORD, CONN.

MICHELIN TIRE CO.
Milltown, New Jersey

Corporation of Connecticut. Filed Sept. 6, 1910. Serial No. 580,612.

1. A brake comprising a band adapted to engage a rotary drum, pairs of pivoted link plates, one pair of link plates being loosely connected with one end of the brake band, an operating lever pivotally connected with the brake band at the point of connection with the link plates, a stud to which the other pair of link plates are pivotally connected and an adjusting bolt pivotally connected to the operating lever and passing through the stud, the other end of said bolt being connected to the other end of the brake band.

977,813. Carburetter. Charles A. Marr-der, New York, N. Y. Filed May 4, 1909. Serial No. 493,893.

1. A carburetter for producing explosive mixtures of constant proportions comprising a mixing chamber with air intake, a fuel supply pipe within same issuing the fuel through its open top, a movable nozzle forming an auxiliary storage chamber for the fuel, an adjustable fuel supply regulator within said nozzle, and means outside of the mixing chamber to move said nozzle and fuel supply regulator up and down on

the fuel supply pipe whereby both the air and fuel supply may be regulated and stopped by the operator.

977,831. Carburetter. Charles E. Page, Detroit, Mich. Filed Feb. 3, 1910. Serial No. 541,911.

1. In a carburetter, in combination with a float chamber, a mixing chamber connected therewith, a regulating valve for controlling the flow from one chamber to the other, an annular liquid-containing member in the mixing chamber in direct communication with the connection between the two chambers, a vertically movable throttle stem extending through said mixing chamber, and members adjustable relatively to each other carried thereby, whereby the space through which air is admitted into said chamber for mixture with the hydrocarbon therein exposed may be definitely proportioned to the space through which the mingled vapor is permitted to escape from the chamber, substantially as described.

977,843. Rim for Tires of Motor Vehicle Wheels. Charles B. Siner, Philadelphia, Pa. Filed Feb. 3, 1910. Serial No. 541,672.

1. In a motor vehicle wheel, a tire hav-

ing a rim, a felly having a rim, the respective rims in position arranged to form tapering transverse openings, one surface being unthreaded and the other threaded and threaded bolts arranged to engage the threaded portion of each of said openings to wedgingly tighten the rims together, against displacement.

977,844. Rim for Tires of Motor Vehicle Wheels. Charles B. Siner, Philadelphia, Pa. Original application filed Feb. 3, 1910, Serial No. 541,672. Divided and this application filed March 9, 1910. Serial No. 548,203.

In a motor vehicle wheel, a separable rim, consisting of two parts, one fixed to the wheel felly, having a flange for engaging the wheel tire, at one edge and a threaded offset or recess at the other edge portion and having beyond the offset or recess thereof, interiorly a tapering threaded bore, the other part formed into a flange for the wheel tire and having an unthreaded portion arranged to register with the offset or recess of said part and a headed and threaded tapering bolt for lockingly holding the inflated tire in connection with the said separable rim by the flanges thereof and the two parts of said rim wedged to each other.

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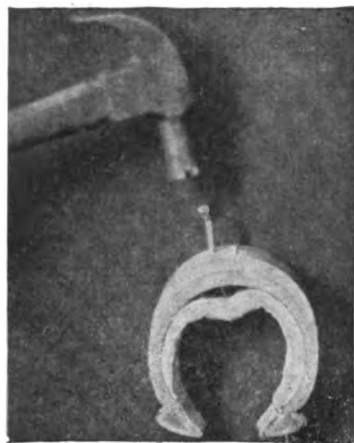



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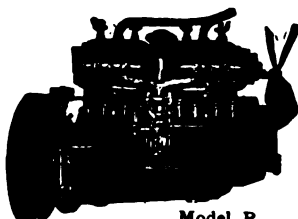
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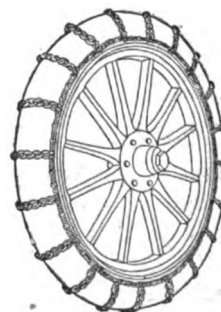
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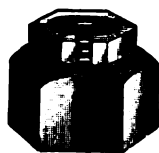
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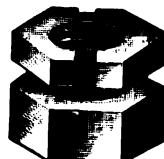


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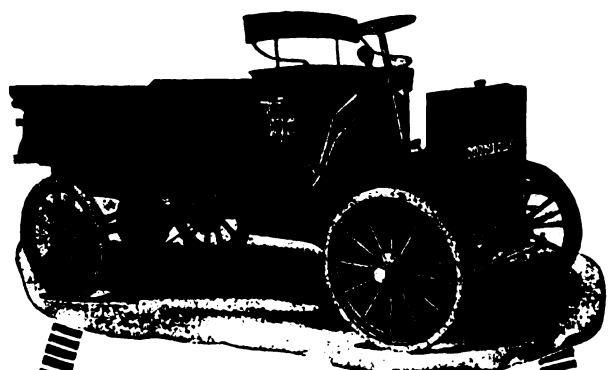


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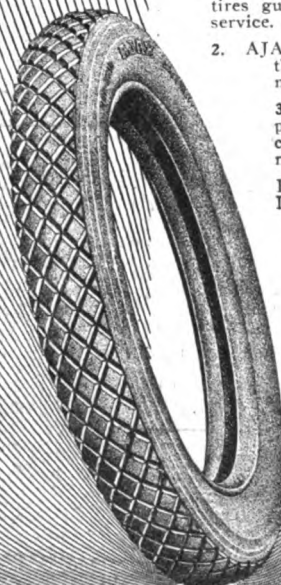
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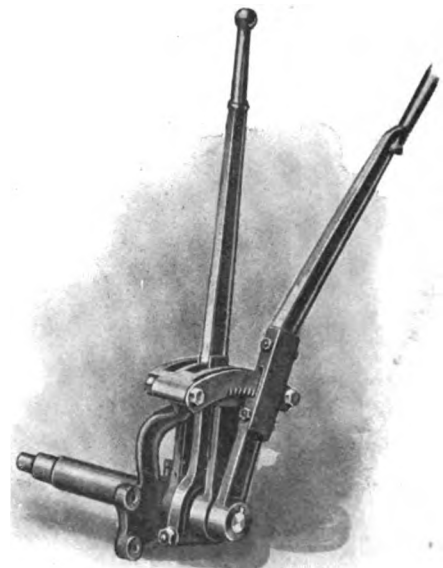
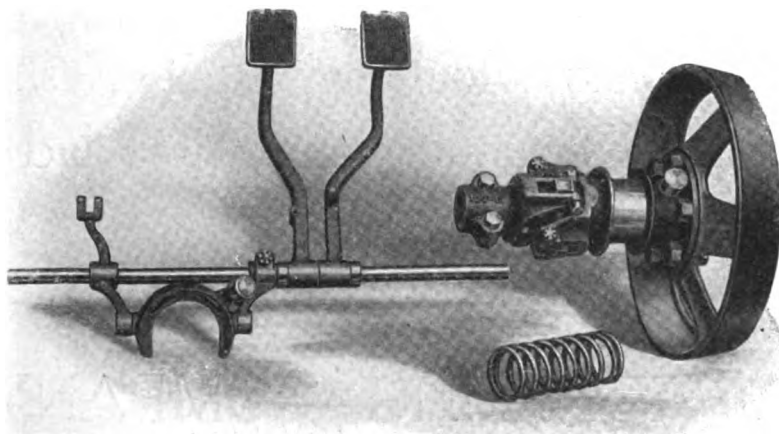
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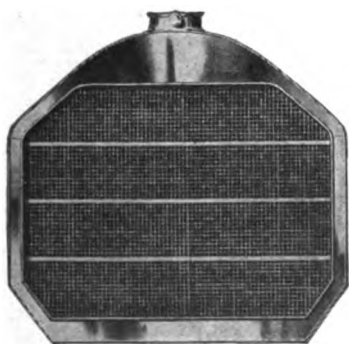
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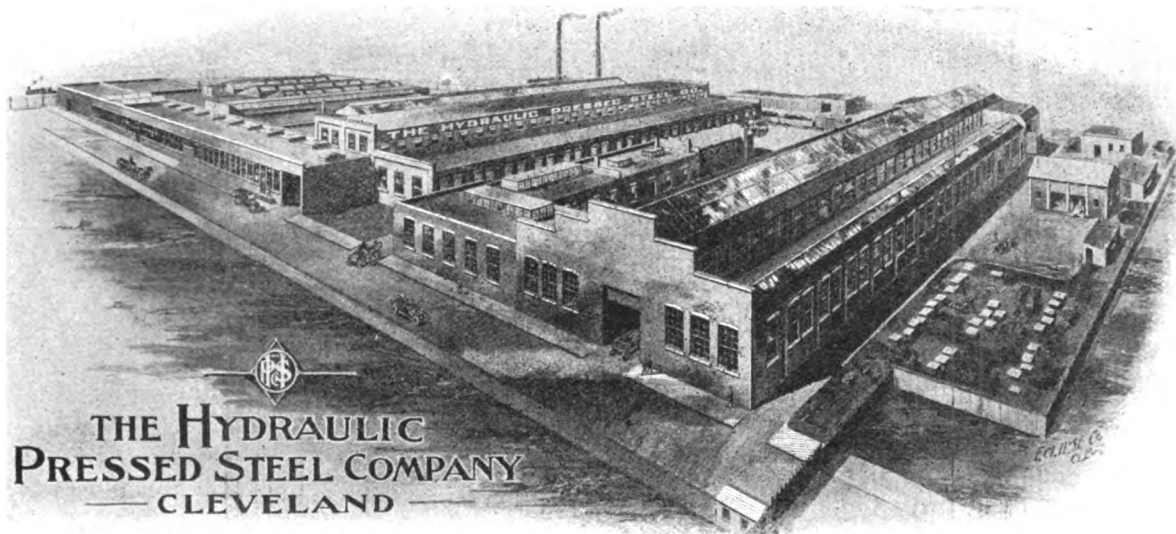
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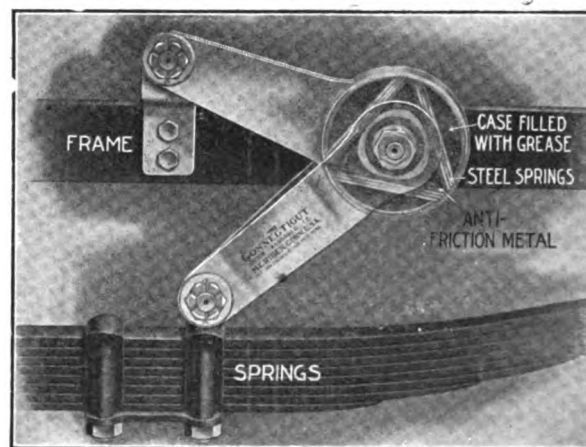
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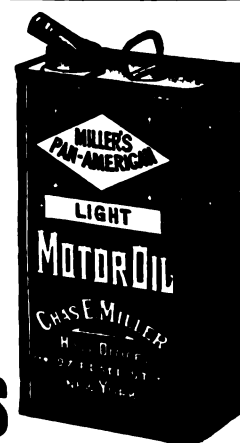
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There can be no substitute for *quality* in an automobile tire, any more than there can be a substitute for *knowledge* of road requirements and how to meet them. Under the name, Kelly-Springfield, knowledge and quality combine to make a tire as perfect as a motor car tire can be made.

On my 40 h. p. Locomobile, I have driven a Kelly-Springfield Tire over 12,000 miles and I know these tires give a greater mileage than any other make I have tried.

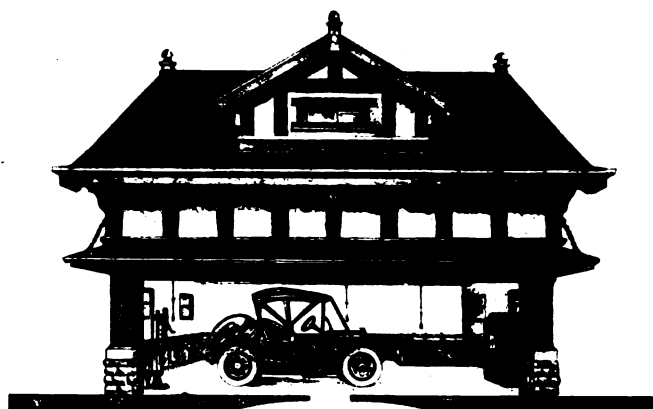
I. H. DOWNES, of Carter Garage Co., New York City.

Specify Kelly-Springfield Tires on your automobile. They cost no more than any first-class tire and are better.

CONSOLIDATED RUBBER TIRE COMPANY
20 VESEY STREET, NEW YORK

Branch Offices:

New York, Chicago, Philadelphia, Boston, St. Louis,
Detroit, Cincinnati, San Francisco, Los Angeles and Akron, O.



If you could put a gasoline outfit in your garage just suited to your needs and still not incur too much expense (in fact, you can regulate the cost) wouldn't you do it?

We make all styles---all sizes---at all prices.
You can get just what you want.

You can't buy an underground system costing less than a "Bowser" or as good a one at any price.

Their Economy Pays Their Cost

Their Convenience is Inestimable

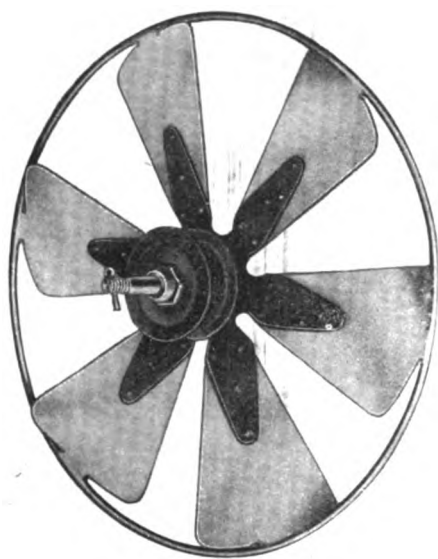
We want every automobile owner interested in a gasoline or oil outfit to have our new booklet, "The Smile of Satisfaction," No. 34 Shows many interesting illustrations—it says little—tells a lot—is worth having.

S. F. Bowser Co., Inc., Ft. Wayne, Ind.

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Boston New York Philadelphia Atlanta
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ONE PIECE BLADE RADIATOR FANS

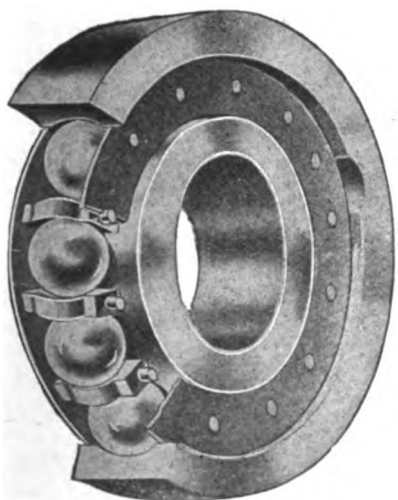
Furnished either with Steel or Aluminum
Blades—No cast metal used in construction.

**Pulleys, Hubs and Spiders
MADE FROM PRESSED STEEL
Imported Ball Bearings
Tool Steel Cones**

If you are interested in Pressed Steel Specialties, we invite correspondence.

THE SPARKS-WITHINGTON COMPANY
Jackson, Michigan

The Pioneers to Employ 92%
of Balls in the Raceway



SCHAFER Ball Bearings Fear No Comparison

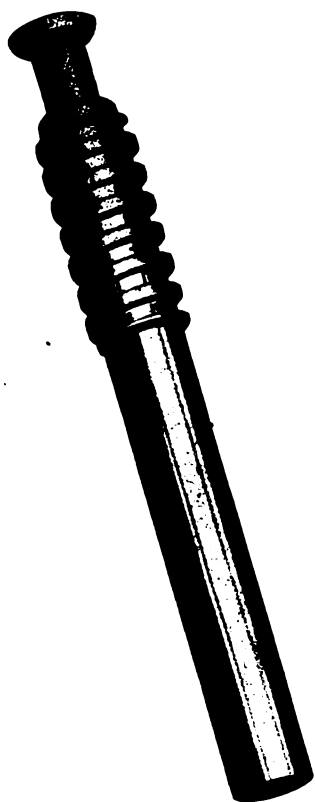
Most of the prominent races and endurance tours
of 1910 were won by "Schafer Equipped Cars."

Our combination radial and thrust bearing is now
ready. Send for details.

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Precise In Finish and Accuracy

ANYTHING in the line of brass, steel and iron parts milled from the bar, requiring a high degree of finish and accuracy is our specialty.

ACME Automatic Multiple Spindle Screw Machines represent the most improved method for the rapid manufacture of parts for the automobile trade:—anything from fine screws, plugs, pins, etc., to heavy couplings up to 10½ inches in length.

WITH your specifications and samples we will quote promptly. Our deliveries and prices are satisfying hundreds of manufacturers and dealers.

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NEW YORK—77 White St.
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DETROIT—1222 Majestic Bldg.
ATLANTA—Candler Bldg.

Warehouses: NEW YORK and CHICAGO

Factories: CLEVELAND, MONTREAL, CAN.

No Nuts—No Bolts—No Clamps No Junk—No Bunk

Adopted as standard equipment on *Benz* cars.

Owners of *Peerless*, *Packard*, *Pierce-Arrow*, *Lozier*, *Chalmers*, *Cadillac*, *Benz*, *Pope-Hartford* and many other makes of cars are ordering us to equip their individual cars with our Demountable Rims, and in a great many instances are specifying them when ordering new cars.



We manufacture our own device and *guarantee it for life* not to be affected by any weather conditions.

Nothing to lose in the sand, dirt or snow. Just mechanically comes off and is mechanically forced on again.

Designed originally as a demountable rim to do away with tire trouble, and for use especially on pleasure cars, it has since developed to the safest, simplest and quickest demountable ever produced.

I consider the Booth perfect, and use them exclusively on all my cars.

—BARNEY OLDFIELD.

It's a Booth! That's all you need to know about a demountable rim. All engineers or any convention of engineers invited to prove that our rim is not mechanically perfect.

THE BOOTH DEMOUNTABLE RIM CO., Cleveland, Ohio

Last Obstacle to Women Driving Cars is Removed

Punctures, Blowouts, Tire Troubles by the Score—With Which No Woman Can Successfully Cope—Have Barred Many From Enjoying the Pleasure of Driving an Electric. Those Who Dared Tire Troubles Faced Humiliating Predicaments. Hard Rubber Tires to Others Meant Rough Riding, Jars and Jolts.

But today any woman can drive a car with sense of perfect security. No tire troubles. No punctures, no blowouts, no rough riding on tires of hard rubber.

For the Motz Trouble-proof Cushion Tire has the resiliency of the pneumatic tire. Note its resiliency from the accompanying illustration. Note how the slantwise bridges, undercut sides and double treads give it pneumatic resiliency. As a consequence, the path of the woman driver of a car has been cleared by the

MOTZ Cushion Tires

Dealers and agents find the Motz is the fastest-selling tire for electrics on the market. For it is already the best known electric tire. This fact is due to extensive advertising, in large space, to owners of automobiles.

Motz Tires average better than 10,000 miles. One set traveled 24,000 miles. A score or more, which have been brought to our attention, have traveled from 15,000 to 20,000 miles.

Tire cost with the Motz is 4-10 of one cent per mile. With pneumatic tires the cost is 5 to 20 cents per mile. The Motz consumes no more current than high grade pneumatic tires.

We also make Motz Trouble-Proof Tires for gasoline cars, physicians' cars, taxicabs, commercial trucks, etc.

The Motz Tire & Rubber Co.
Dept. 58 AKRON, OHIO (21)



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A Reputation That Stands For Something

SIMMS MAGNETOS have earned the respect of motorists for invariable Efficiency and Reliability, and every magneto we turn out is made with the sole idea of adding to this reputation.

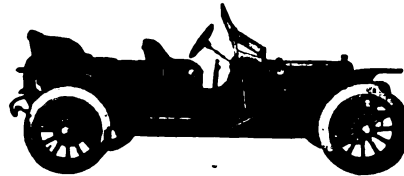
The Simms Motor Starter is used in connection with the standard Simms Magneto and starts the motor without cranking.



THE SIMMS MAGNETO CO.
1780 BROADWAY, NEW YORK CITY
London Representative: Simms Magneto Co., Ltd.
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MERCER

TOURING CAR
RACEABOUT
TOY TONNEAU



Model "30"-C
Toy Tonneau
\$2150

MERCER AUTOMOBILE CO., Trenton, N. J.

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Boston—FRED S. SMITH, 38 Columbus Ave.

Chicago—SCHILLO SALES CO., 945 E. Dakin St.

Philadelphia—CARROLL A. HAINES & CO., 2214 Spring Garden St.

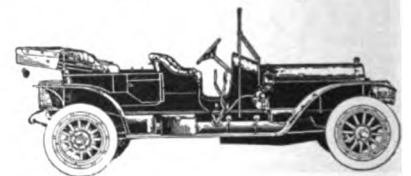


Always the Symbol of High Grade Products.

Built in a wide variety of models suitable for every motor need.

From 3000 to 6000 dollars in price.

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KISSEL KAR

THE KISSELKAR is made complete in one factory, under a system of inspection that obtains a refinement and perfection of detail surpassed in no other car.

KisselKar 3-Ton Truck, \$3500

KISSEL MOTOR CAR CO. 159 Kissel Avenue
HARTFORD, WIS.

Write for catalog.

30		\$1500
50		\$2000
60		\$2500

H. P.

Model D 11—50 H. P.

Standardization of Rims

that benefits

Car Builders—Tire Makers—Car Owners

The Standard Universal Quick Detachable Demountable Rims

"FIT ALL TIRES"

and

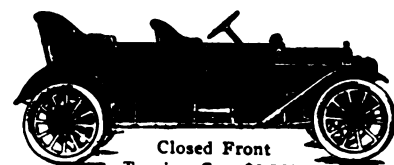
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"The Finest Riding Car in The World"



Closed Front
Touring Car, \$2,750

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But there is no end to this satisfaction when the car lives up to its reputation, so handsomely in daily service as does the Marmon.

NORDYKE & MARMON CO., Indianapolis, Ind.
(Estab. 1851) Sixty Years of Successful Manufacturing

Solar Users Are the Best Solar Advertisers

It isn't because we advertise, it isn't because of any special salesmanship we possess, that most of the high-grade American cars are today equipped with Solar Lamps.

It takes more than good advertising or good salesmanship to make a car manufacturer pay out thousands of dollars more for his lamp equipment each year.

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Even when a car maker doesn't equip regularly with Solar Lamps, he'll furnish them if you insist on them.

Have him put Solars on your car, and join the great army of those who have abolished lighting troubles.

We should like to place our interesting free catalog in your hands.

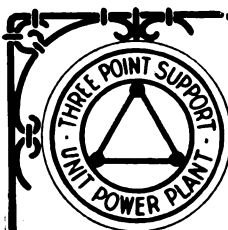
Badger Brass Mfg. Co.

Kenosha, Wis.

New York City



(93)



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Built 'Round a Principle

EACH MODEL PRE-EMINENTLY
CONFORMS TO THE DEMANDS
OF THE DAY

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Chicopee Falls, Massachusetts

on that new Truck, specify

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Quick Removable

SIDE-WIRE TIRES

and end your tire troubles before they begin

THE FIRESTONE TIRE & RUBBER CO.

"America's Largest Exclusive Tire and Rim Makers" AKRON, Ohio

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The Car You'll Be Proud To Own

The same mechanical perfection and graceful, symmetrical lines found in the new popular models of the highest priced cars are embodied in our

"Fore-Dore" 30-36 H. P. Touring Car, \$1,650

Compare it with any \$2,500 car—we are willing to abide by your judgment.

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"The Aristocrat of Medium Priced Cars"

SEVEN—MODELS—SEVEN \$850 to \$1600

The Car of Perfect Control, Silence and Comfort. If the Petrel is not represented in your vicinity, write us today before the opportunity is gone. Immediate delivery.

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Speedwell —A car that no man has ever worn out; that is bought by thousands who can afford the best; that is adjudged by those same men and others the best motor car value in America—

\$2500 to \$2900

Speedwell Motor Car Co. Standard chassis of all Speedwell models has 50 Essex Ave., Dayton, Ohio 121 inch wheel base and 50 H.P. motor.



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**A Complete
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for
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**4 Cylinder Cars
24 to 40 H.P.
\$1500 to \$2750**

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**Kline Kar
Owners
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**6 Cylinder Cars
50 and 60 H.P.
\$2650 to \$3250**

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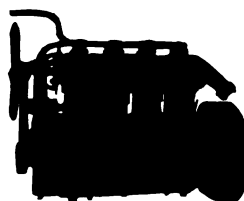
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Send for Special Offer. The best retailers
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now can be had in 18 makes of pleasure cars and in 10 makes of commercial cars, and the number is rapidly growing. Why? Because—"They're the best." Place your orders early for prompt deliveries.

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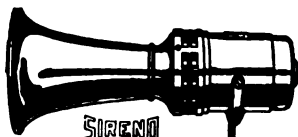
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FREE—The most complete, comprehensive and condensed vest pocket reference book ever published on the subject. Full of valuable hints. Tells just what you want to know about Ignition, etc.—makes you master of your own ignition system. Write at once for a copy.

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\$1.00

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are and have been the recognized quality standard for 20 years. Strong, accurate and durable. Let us cut your sprockets.

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Capacity 8,000,000 feet per year.

WHITNEY Chains Are Built for Strains

Approved by Men Who Know

THE WHITNEY MFG. CO., Hartford, Conn.



Bosch-Equipped Cars Win

In Panama-Pacific Race

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The Free-for-All—163.8 Miles—Won by

Car	Driver	Magneto
Pope-Hartford	Dingley	Bosch

The Light Car Race—98 Miles Won by

Car	Driver	Magneto
Mercer	Bigelow	Bosch

Dingley in Bosch-Equipped Pope-Hartford also won second place in Heavy Car Race.

Thus Bosch Magnetos Triumph in first important 1911 race after winning 42 of the 44 long distance races of 1910.

"Specify Bosch for Your New Car"

Mosler



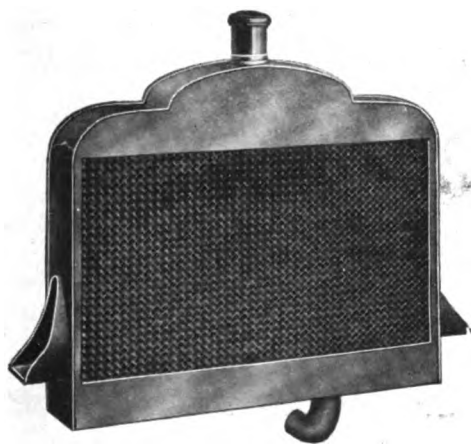
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Pressed Steel Work

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ALL SIZES

OUR plant equipment is of the largest and most complete kind; our experience dates from the beginning of the automobile industry and our reputation guarantees the quality of the product. We are ready and willing to lend a helpful hand to builders and have a fund of valuable information which is at their disposal. Write us.

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"The Ideal Car for all Purposes"

The only \$1250 car with a record of three years of success behind it

\$1250

Runabout, Baby Tonneau, Touring Car, Coupe
Greatest Automobile Value in America

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Rebuilt Thomas Flyers
and other makes practically as good as new
which are cheaper and better than some new
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means losing.

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"The Henry is the car of 1911." Sales are big. Ter-
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Are you acquainted with
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power, type and price com-
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big, roomy, solid-comfort
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Henry Motor Car Sales Co., 280 Columbus Avenue,
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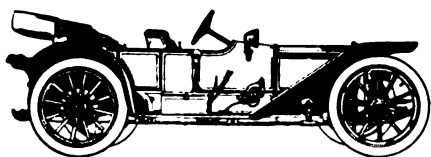
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THE AMERICAN

"A Car for the Discriminating Few"

So fine a car that heretofore it has been restricted to the leading
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dealer alike.



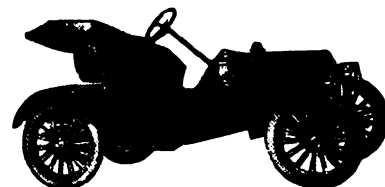
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TRAVELER**

Underlying
frame; 40 in.
wheels; 4 cyl.; 30
H. P., \$4250.

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Licensed under Selden patent.

Metz 1911 Runabout

Every car fully equipped
exactly as shown
\$485



EQUIPMENT—Bosch magneto, top and slip cover, gas
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clincher tires, and set of tools.

GOOD DEALERS WANTED IN UNOCCUPIED TERRITORY.

METZ COMPANY, Waltham, Mass.

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Manufactures and Sells
TIRE MILEAGE
Not Merely Tires

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Direct Distributing Establishments in all principal cities.



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New Britain, Conn., U. S. A.
Licensed under Selden patent.

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Crucible Chrome Nickel
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Alloys Used Exclusively.

PROMPT DELIVERIES

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VALVELESS

Amplex

The one car in America that offers you all that a high grade, high power car can offer; and in addition the tremendous advantages in operation and maintenance which only a perfect valveless motor can give.

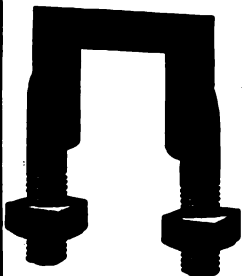
SIMPLEX MOTOR CAR COMPANY

Dept. B

Mishawaka, Ind.

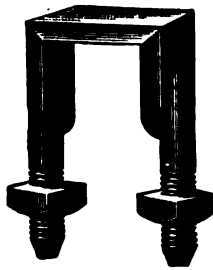
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Forgings for the Automobile Trade



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are now in use, having been supplied to the leading automobile manufacturers.

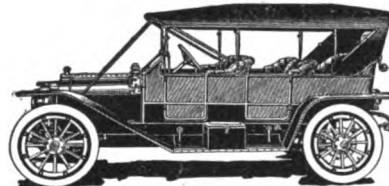


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THE **SELDEN** CAR FOR 1911



With complete touring equipment, from \$2250 to \$2800

Good territory still open for live agents.

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Licensed under Selden patent

"RAJAH" SPARK PLUGS

IGNITION ABSOLUTELY SURE

RAJAH AUTO SUPPLY COMPANY

BLOOMFIELD, NEW JERSEY, U. S. A.

(Watering Station, D. L. & W. R. R.)



SIXTEEN
MODELS

Hill Climbers

A most complete line, both pleasure and commercial, ranging in price from \$650 to \$1750.

A CAR FOR EVERY ARGUMENT
YOUR TERRITORY MAY BE OPEN

Write today - Desk A

MAYTAG-MASON MOTOR CO., Waterloo, Iowa

Moline

"King of the Road"

THE latest addition to the "Dreadnought" Moline 1911 Models. Beautifully finished in a rich dark grey, heavy nickled and black enameled trimmings. Price includes zig-zag windshield, five lamps and full kit of tools. Equipped with our famous



Fore Door, \$1700

4x6 Long Stroke Motor

with which we won Chicago Trophy in 1910 Glidden Tour and Team Trophy in 1000 mile Chicago run. Write for booklets on both runs and 1911 Catalog

TOURING TYPE, \$1650

TOY TONNEAU, \$1600

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35 H. P.
112-in. Wheel Base
36-in. Wheels

Warner Gear Co.
MUNCIE, INDIANA



**Steering Gears
Transmissions
Differentials
Clutches and
Control Levers**

MODEL 95—UNIT TRANSMISSION
Brake and Clutch with Raybestos-faced Discs.
25-35 H. P.

The 1911 De Tamble

Model G—2-Passenger Roadster.....\$1,000
Model H—5-Passenger Touring Car..... 1,150
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You can't pay more and get your money's worth.

Catalogue and full details of our complete line sent on request. Open territory proposition for live dealers.

THE DeTAMBLE MOTORS CO. ANDERSON INDIANA

The *Paige-Detroit* 1911

4 Cycle—4 Cylinder **\$800**
Full 25 H. P. Motor

Complete specifications and catalogue upon request

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245-255 Twenty-First Street Detroit, Mich.

Since the "Year 1" in American automobile building the Haynes has stood in a place by itself. It was the first—the parent car. And the

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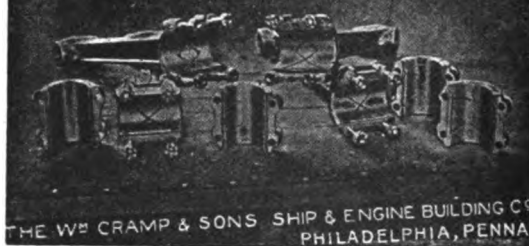
has kept its leadership. It is the finished result of ripe experience—of seventeen years of intelligent, sincere endeavor. A car of noble lines and distinguished lineage.

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Send for our interesting, handsomely illustrated Annual and Book of Evidence.

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30,000 MILES WITHOUT ADJUSTMENT.
THESE PARSONS WHITE BRASS BEARINGS RAN
THAT DISTANCE IN A PACKARD CAR. THEY ARE BACK IN
THE CAR WITHOUT EVEN BEING SCRAPPED
STILL RUNNING RUNNING STILL.



**Cramp
—
Metals**

THE W. CRAMP & SONS SHIP & ENGINE BUILDING CO.
PHILADELPHIA, PENNA.

Two Factories Now for

BROWN-LIPE GEARS

Transmission and Steering Gear Department
Operated by

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Differential Gear Department by

BROWN-LIPE-CHAPIN COMPANY
SYRACUSE, N. Y.

Capacity Immensely Increased

H. W. CHAPIN, General Manager

*Write for catalogue
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Abbott-Detroit

1911 MODELS
NOW READY

The Perfectly Standardized Car

ABBOTT MOTOR CO.
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Baldwin Chains

give that kind of service which the buyer has a right to expect from chains which have been chosen because of their well-known quality; accuracy in pitch and durability being especially distinguishing features.

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Worcester, Mass.

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Packard

CABLE

Is Absolutely Sure

Don't take chances on the wiring of your car, when it actually COSTS LESS TO USE THE BEST. You get more (experience) with cheap cable to be sure; in fact you soon become familiar with the vernacular of the Yankee mule-driver and his special rates for long hauls!

Just put on Packard Cable and forget all about your ignition troubles

NEW LINE OF ELECTRIC LIGHTING CABLES NOW READY

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from flaws, true to drawing within 1-1000 of an inch and equal in appearance to a machined product?

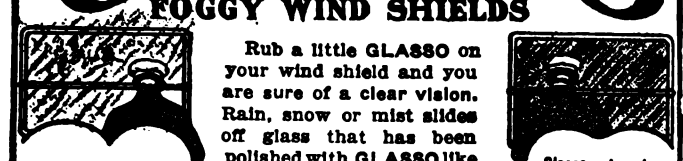
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Years of experience in compounding white metal alloys, mixing in our own factory and wholesale dealing in metals enable us to give you maximum quality at minimum cost. **WRITE US.**

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Rub a little GLASSO on your wind shield and you are sure of a clear vision. Rain, snow or mist slides off glass that has been polished with GLASSO like water off a duck's back.

Glasse not used

A clear vision is as necessary as a clear head. Don't take chances by driving with a befogged shield. One application of Glasso will last 4 days—one bottle will last a season. Price per bottle, \$1.00.

THE GLASSO COMPANY
Motor Car Equipment Co., Distributors
55A WARREN STREET NEW YORK

"K-B" Universal Joints

KANT-BEAT

FOR COMMERCIAL CARS PLEASURE CARS

Made from Drop Forgings and Case Hardened Throughout.

ACCURACY, RELIABILITY AND SATISFACTION GUARANTEED

Prompt Deliveries

KINSLER-BENNETT COMPANY, Hartford, Conn.
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CYLINDER CASTINGS

—the kind that satisfy

THE MANUFACTURERS FOUNDRY CO.
WATERBURY, CONN.

The Royal Equipment Co.

Manufacturers of

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TRADE MARK

BRAKE LINING

and

The Raymond and Duplex Brake

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Real Radiators

made of individual square tubes so much imitated in appearance, only.

FEDDERS RADIATORS

are just what they appear to be—genuine square tubes. Furnished with tubes "staggered" or Mercedes finish.

You See the Fedders on the Finest Cars

FEDDERS MANUFACTURING WORKS, Buffalo, N. Y.

MONEY SAVERS AND MONEY GETTERS

Atterbury Commercial Wagons and Trucks

FULL INFORMATION UPON APPLICATION

WE make vehicles for any kind of business, guarantee efficient service and as one of the oldest makers of commercial power-wagons our product is a known and fixed quantity. We can interest any merchant interested in effecting a business economy.

ATTERBURY MOTOR CAR COMPANY, Buffalo, N. Y.

PRESSED STEEL BRAKE DRUMS

Up to 24 Inches Diameter
and One-half Inch Thick.
Accurate to Dimensions.

PRICES RIGHT

Delivery When Wanted Special Stampings to Order

THE BOSSERT COMPANY, Utica, N. Y.

Car Manufacturers

write us for sample sets, and prices
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OIL GAUGE

Also prices on complete outfits for Pressure Gasoline Feed and Pressure Lubrication. Our gauges are used by many prominent manufacturers. Write us today.

E. EDELMANN & CO., 53 W. Kinzie Street, CHICAGO

"HARTFORD"

Universal Joints and Cone Clutches

THE HARTFORD AUTO PARTS CO.
Hartford, Conn.

Exclusive Sales Agents:
J. S. BRETZ CO., 250 West 54th Street, New York, N. Y.

Heinze High Tension Magneto



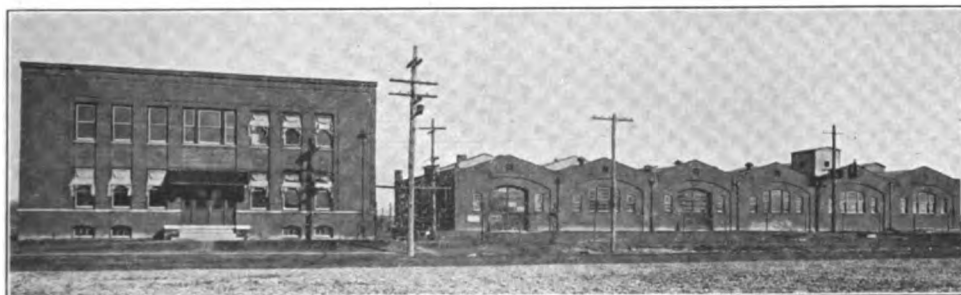
Construction—Mechanically unequalled.

Durability—Greater than the life of the car.

Efficiency—Proven by the users.

Catalogue H with full information is yours for the asking.

HEINZE ELECTRIC COMPANY
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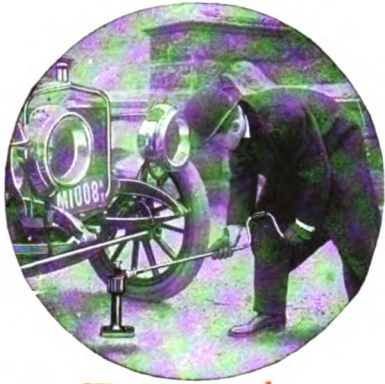


For

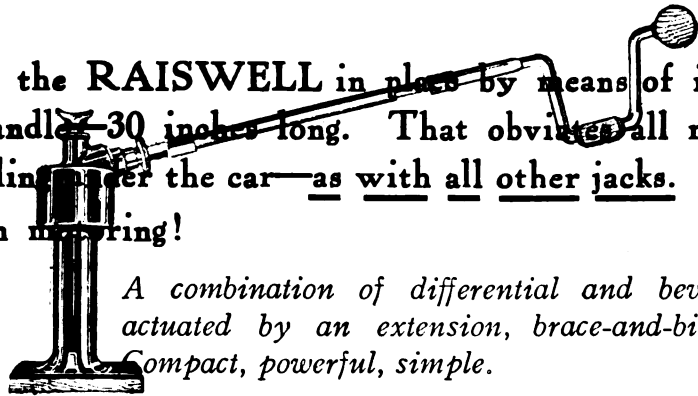
Pressure Castings

of any metal and size desired,
including Bronze, Aluminum
Alloys and Bearing Metals.

RAISWELL



You set the RAISWELL in place by means of its long-reach handle—30 inches long. That obviates all necessity of crawling under the car—as with all other jacks. A new factor in motoring!

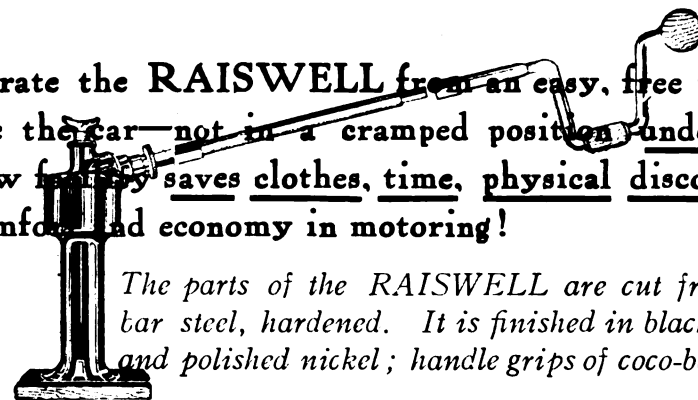


A combination of differential and bevel gears, actuated by an extension, brace-and-bit handle. Compact, powerful, simple.

RAISWELL



You operate the RAISWELL from an easy, free position alongside the car—not in a cramped position underneath. That new feature saves clothes, time, physical discomforts. New comfort and economy in motoring!

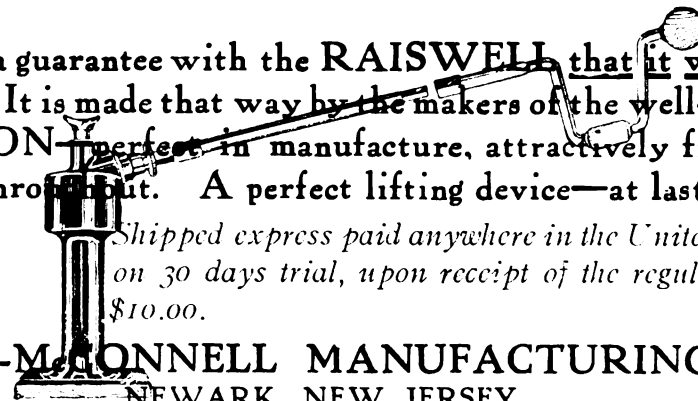


The parts of the RAISWELL are cut from solid bar steel, hardened. It is finished in black enamel and polished nickel; handle grips of coco-bola wood.

RAISWELL



You get a guarantee with the RAISWELL that it will last forever. It is made that way by the makers of the well-known KLAXON—perfect in manufacture, attractively finished, unique throughout. A perfect lifting device—at last!



Shipped express paid anywhere in the United States, on 30 days trial, upon receipt of the regular price, \$10.00.

LOVELL-McCONNELL MANUFACTURING CO.
NEWARK, NEW JERSEY



THE GARFORD

WHEN you sell a Garford car you can safely say to the buyer: "This car will last seven years. We don't know how much longer. All we made seven years ago are running now and give no indication of wearing out." This fact is a powerful asset to the dealer and a sales-argument of unusual value.

THE GARFORD LIMOUSINE

We have recently completed the equipment of our first limousine. We wish you could see it. We have seen a great many limousines, but never one as tasteful and dignified as ours. Our product is primarily touring cars. We make very few limousines.

In consequence we are able to "build" them not "manufacture" them. We do not run "through a lot of standard limousines." Every one is built and equipped as though it were the only one we were ever going to make, and we are being assisted by the best talent we can get in the country irrespective of whether it is in our employ or not. Every car, so to speak, is a "special job."

We have not only got to produce the top notch of high-grade car, but we do it in such a way that it cannot be questioned. It is the essence of our business plan, and, if we do not do it, the plan fails.

Our G-8 preliminary circular will describe that business plan and why it necessarily makes to your advantage. We will gladly send it on request addressed to the Garford Company, Elyria, Ohio.

Send for preliminary illustrated circular now, while you think of it.

THE GARFORD COMPANY, Elyria, Ohio, U. S. A.

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